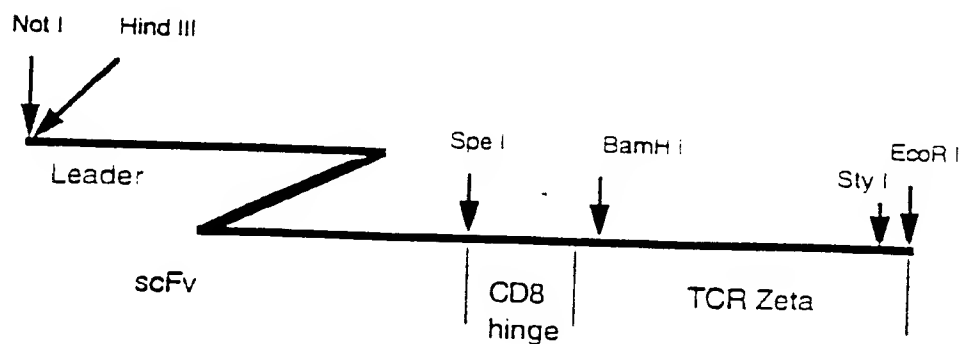
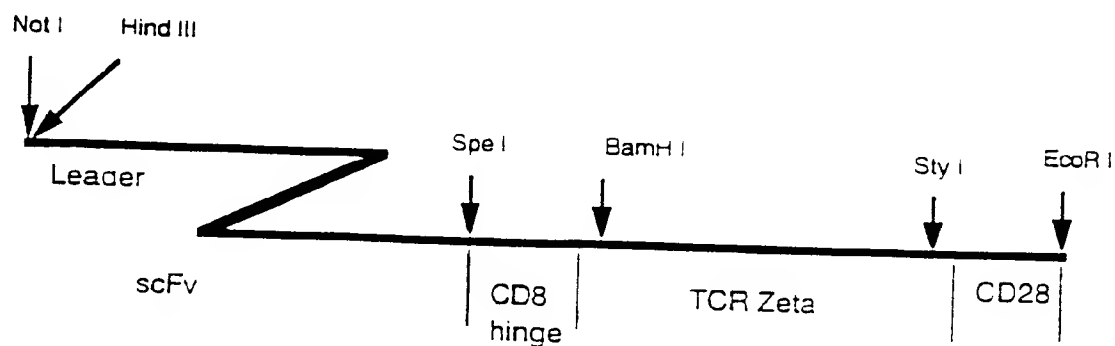
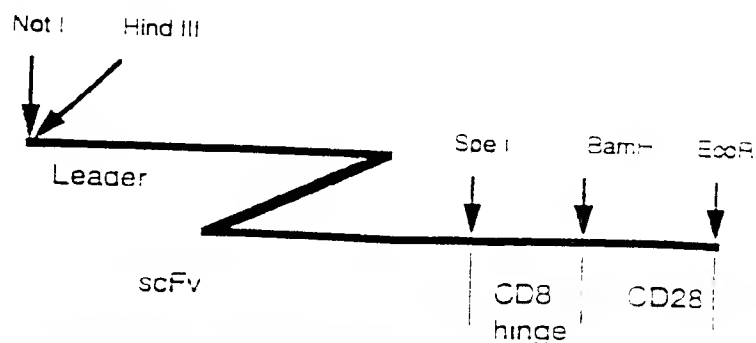


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FIG. 1

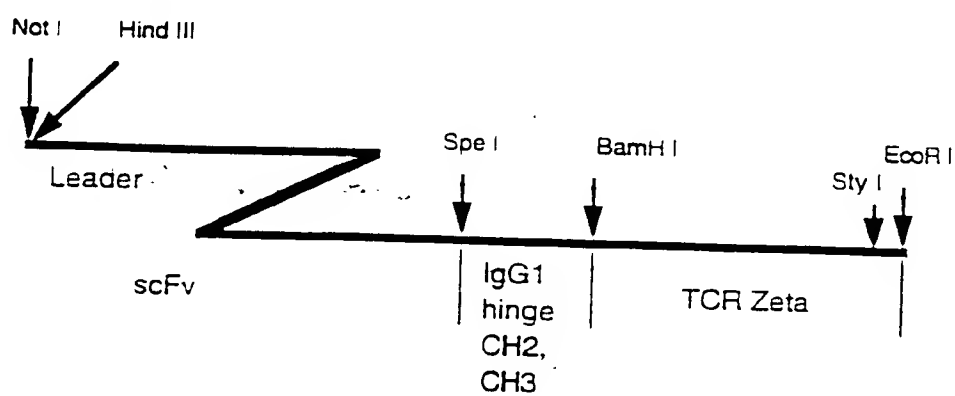
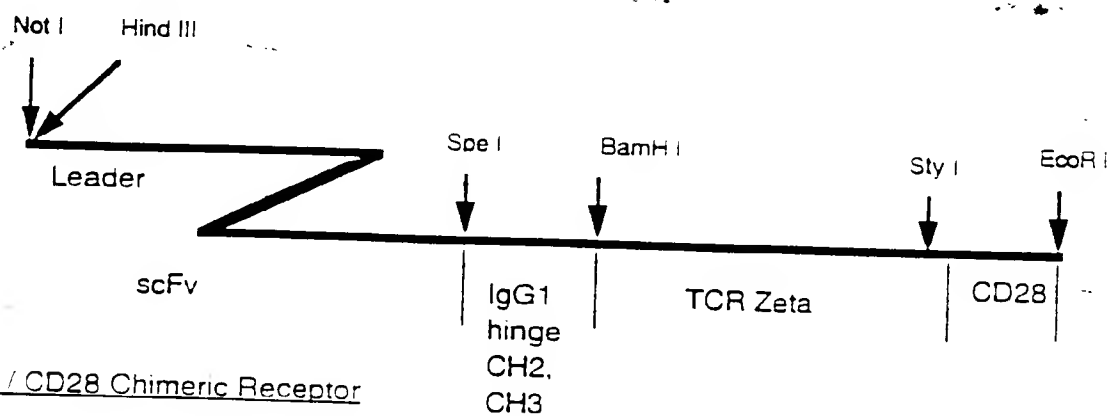
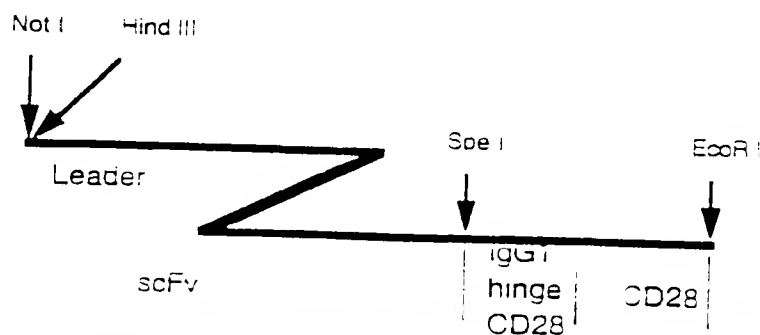
Construct cassettes cloned into pBluescript SK +

scFv / CD8 / Zeta Chimeric ReceptorscFv / CD8 / Zeta-CD28 fusion Chimeric ReceptorscFv / CD8 / CD28 Chimeric Receptor

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FIG. 2a

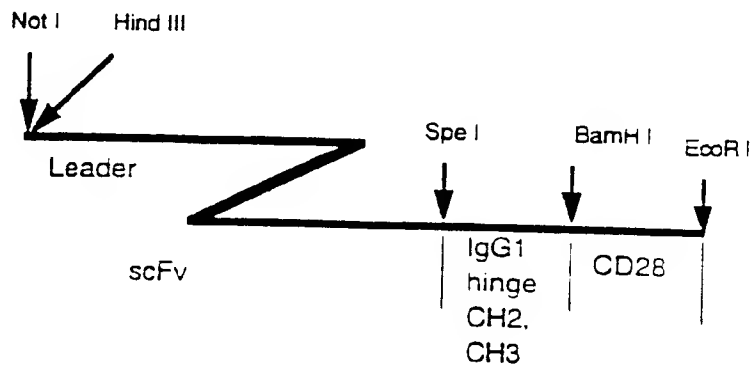
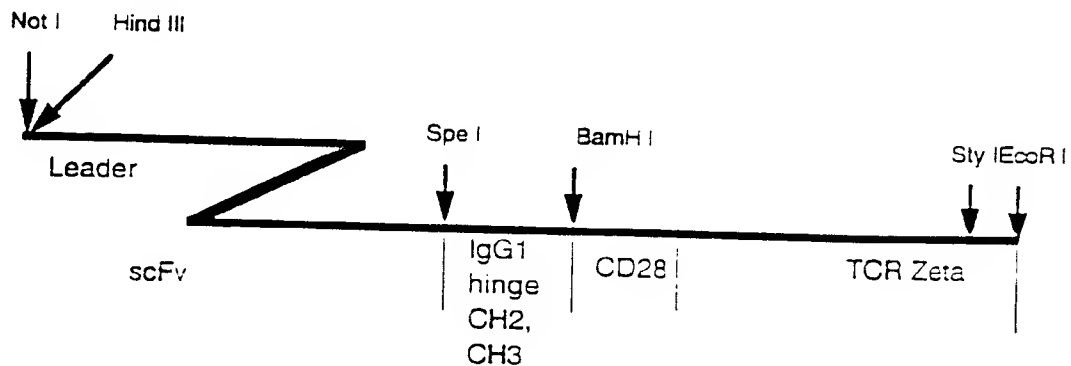
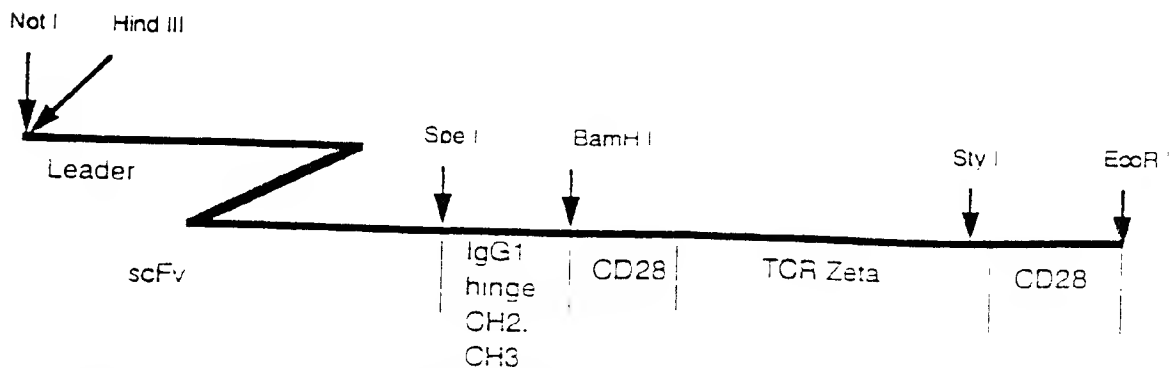
Construct cassettes cloned into pBluescript SK +

scFv / G1 / Zeta Chimeric ReceptorscFv / G1 / Zeta-CD28 fusion Chimeric ReceptorscFv / F / CD28 Chimeric Receptor

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FIG. 2b

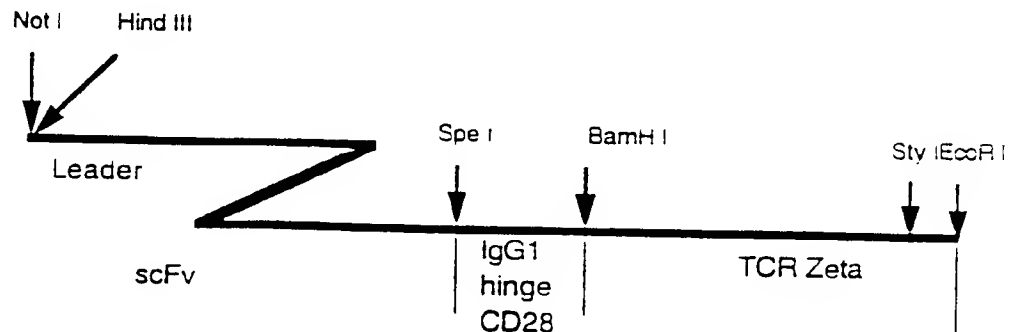
Construct cassettes cloned into pBluescript SK +

scFv /G1 /CD28 Chimeric ReceptorscFv /G1 /CD28-Zeta fusion Chimeric ReceptorscFv /G1 /CD28-Zeta-CD28 fusion Chimeric Receptor

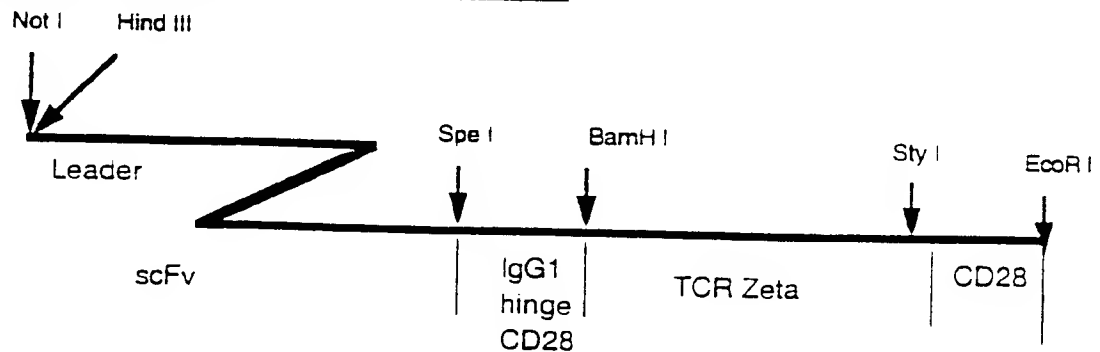
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FIG. 2c  
Construct cassettes cloned into pBluescript SK +

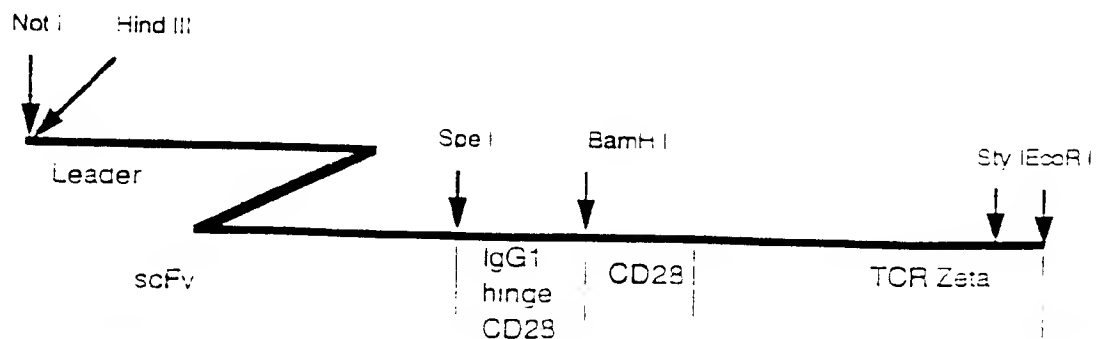
scFv / h.28 / Zeta Chimeric Receptor



scFv / h.28 / Zeta - CD28 fusion Chimeric Receptor



scFv / h.28 / CD28-Zeta fusion Chimeric Receptor



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FIG. 3  
OLIGONUCLEOTIDE SEQUENCES FOR T-BODY CONSTRUCTION

All oligos listed in the 5' to 3' orientation.

- R6490 :     ATA TAG CGG CCG CAA GCT TCC ACC ATG TCT GTC CCC ACC CAA  
 GTC CTC
- R6491 :     TGA CCC TCC GCC ACC TGA CCC TCC GCC ACC TGA CCC TCC GCC  
 ACC TGA CCC TCC GCC ACC TGA CCC TCC GCC ACC TTT TAC TTC TAC TTT AGT ACC
- R6492 :     GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA GGT GGC GGA  
 GGG TCA GGT GGC GGA GGG TCA GAG GTG CAG CTG GTG CAG TCT
- R6493 :     TAT ATA CTA GTA GAA GAC ACT GTC ACC AGT
- R6516 :     TGA CCC TCC GCC ACC TGA CCC TCC GCC ACC TGA CCC TCC GCC  
 ACC TGA CCC TCC GCC ACC CGT ACG TTT TAC TTC TAC TTT
- R6515 :     GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA GGT GGC GGA  
 GGG TCA GGT GGC GGA GGG TCA CAG ATT CAG CTG GTG CAG TCT
- R6514 :     TAT ATA CTA GTC GGG CCC TTC GTT GAG GCA
- R6494 :     ATA TAA CTA GTA ACT CCA TCA TGT ACT TCA GCC ACT TCG TGC  
 CGG TCT TCC TGC CAG CG
- R6495 :     CGG TGT TGG TGG TCG CGG CGC TGG CGT CGT GGT GGG CTT CGC  
 TGG CAG GAA GAC CGG CAC
- R6496 :     GCG CCG CGA CCA CCA ACA CCG GCG CCC ACC ATC GCG TCG CAG  
 CCC CTG TCC CTG CGC CCA
- R6497 :     TAT ATG GAT CCA GCA GGC CAA AGC TCT GCG COT CTG GGC GCA  
 GGG ACA GGG GCT G
- R6506 :     TAT ATG GAT CCC GCG TCT GGG CGC AGG GAC AGG GGC TG
- R6488 :     ATA TAG GAT CCC AAA CTC TGC TAC CTG CTG

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## FIG. 3(contd.)

R6489 : TAT ATG AAT TCT TAG CGA GGG GGC AGG GCC TGC AT  
 P3240 : TAT GGA TCC AAG CCC TTT TGG GTG CTG GTG GTG  
 P3241 : TAT GAA TTC TCA GGA GCG ATA GGC TGC GAA  
 P3301 : GCC ACC AAG GAC ACC TAC GAC GC  
 P3302 : CCC CCT CGC AGG AGT AAG AGG AGC AGG CTC CTG CAC AGT GAC  
 TAC ATG AAC ATG ACT CCC C  
 P3303 : CAA GCA TTA CCA GCC CTA TGC CCC ACC ACG CGA CTT CGC AGC  
 CTA TCG CTC CTG AGA ATT CAT A  
 P3304 : TAT GAA TTC TCA GGA GCG ATA G  
 P3305 : GCA TAG GGCTGG TAA TGC TTG CGG GTG GGC CCG GGG CGG CGG  
 GGA GTC ATG TTC ATG TAG T  
 P3306 : CTC TTA CTC CTG CGA GGG GGC AGG GCC TGC ATG TGA AGG GCG  
 TCG TAG GTG TCC TTG GTG GC  
 S0146 : CGA CTA GTG ACA AAA CTC ACA CAT GCC CAC CGT GCC CAA AAG  
 GGA AAC ACC TTT GTC CAA GGT CCC  
 S0060 : CGA CTA GTG ACA AAA CTC ACA CAT GCC CAC CG  
 S0061 : TTG GGA TCC AGT TTA CCC GGA GAC AGG GAG AGG CT  
 T4057 : CTA CTA GTG ACA AAA CTC ACA C  
 T4058 : TTG GGA TCC AGG GGC TTA GAA GGT CCG GGA AAT AG  
 T7145 : CTG GAT CCC AAA TTT TGG GTG CTG GTG GTG GTT G  
 T4060 : GCT CCT GCT GAA CTT CAC TCT GGA GCG ATA GGC TGC GAA GTC G  
 T4387 : GCG ACT TCG CAG CCT ATC GCT CCA GAG TGA AGT TCA GCA GGA  
 GCG  
 S4700 : TAT GAA TTC TTA GCG AGG GGG CAG GGC CTG CAT G

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FIG. 4

SEQUENCE OF RCTM01 / CD8 / ZETA RECOMBINANT CHIMERIC RECEPTOR

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      10      20      30      40
      *      *      *      *
ATG TCT GTC CCC ACC CAA GTC CTC GGA CTC CTG CTG CTG TGG
TAC AGA CAG GGG TGG GTT CAG GAG COT GAG GAC GAC GAC ACC
M S V P T Q V L G L L L L W>

      50      60      70      80
      *      *      *      *
CTT ACA GAT GGC AGA TGC GAT ATC CAG ATG ACT CAG AGT CCA
GAA TGT CTA CGG TCT ACG CTA TAG GTC TAC TGA GTC TCA GGT
L T D A R C D I Q M T Q S P>

      90      100      110      120
      *      *      *      *
AGT ACT CTC AGT GGC AGT GTA GGT GAT AGG GTC ACC ATC ACT
TCA TGA GAG TCA CGG TCA CAT CCA CTA TCC CAG TGG TAG TGA
S T L S A S V G D R V T T T>

      130      140      150      160
      *      *      *      *
TGT AGG AGT AGT AAA AGT CTC CTC CAT AGT AAC GGT GAC ACC
ACA TCC TCA TCA TTT TCA GAG GAG GTA TCA TTG CCA CTG TGG
C R S S K S L L H S N G D T>

      170      180      190      200      210
      *      *      *      *      *
TTC CTC TAT TGG TTC CAG CAG AAA CCA GGT AAA GCC CCA AAG
AAG GAG ATA ACC AAG GTC GTC TTT GGT CCA TTT CGG GGT TTC
F L Y W F Q Q K P G K A P K>

      220      230      240      250
      *      *      *      *
CTC CTC ATG TAT AGG ATG AGT AAC CTC GCC AGT GGT GTA CCA
GAG GAG TAC ATA TCC TAC TCA TTG GAG CGG TCA CCA CAT GGT
L L M Y R M S N L A S G V P>

      260      270      280      290
      *      *      *      *
TCT AGA TTC AGT GGT AGT GGT AGT GGT ACT GAG TTC ACT CTC
AGA TCT AAG TCA CCA TCA CCA TCA CCA TGA CTC AAG TGA GAG
S R F S G S G S G T E F T L>

      300      310      320      330
      *      *      *      *
ACT ATC AGT AGT CTC CAG CCA GAT GAT TTC GCC ACT TAT TAT
TGA TAG TCA TCA GAG GTC GGT CTA CTA AAG CGG TGA ATA ATA
T T S S L Q P D D F A T Y Y>

      340      350      360      370
      *      *      *      *
TGT ATG CAG CAT CTC GAA TAT CCA TTC ACT TTC GGT CAG GGT
ACA TAC GTC GTA GAG CTT ATA GGT AAG TGA AAG CCA CTC CCA
C M Q H L E Y P F T F G Q G>

      380      390      400      410      420
      *      *      *      *      *
ACT AAA GTA GAA GTA AAA COT ACG GGT GGC CCA GGG TCA GGT
TGA TTT CAT CTT GAT TTT GCA TGC CCA CGG COT CCC AGT CCA
T K V E V K R T G G G G S S G>

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FIG. 4(contd.)

430                      440                      450                      460  
 GGC GGA GGG TCA GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA  
 CCG COT CCC AGT CCA CCG COT CCC AGT CCA CCG COT CCC AGT  
 G G G S G G G S G G G S>

470                      480                      490                      500  
 GGT GGC GGA GGG TCA CAG ATT CAG CTG GTG CAG TCT GGA GCA  
 CCA CCG COT CCC AGT GTC TAA GTC GAC CAC GTC AGA COT COT  
 G G G G S Q I Q L V Q S G A>

510                      520                      530                      540  
 GAG GTG AAG AAG COT GGA TCT TCT GTG AAG GTG TCT TCT AAG  
 CTC CAC TTC TTC GGA COT AGA AGA CAC TTC CAC AGA ACA TTC  
 E V K K P G S S V K V S C K>

550                      560                      570                      580  
 GCA TCT GGA TAC ACC TTC ACC GAC TAC TAC ATT AAT TGG ATG  
 COT AGA COT ATG TGG AAG TGG CTG ATG ATG TAA TTA ACC TAC  
 A S G Y T F T D Y Y I N W M>

590                      600                      610                      620                      630  
 AGA CAG GCA COT GGA CAG GGA CTC GAG TGG ATT GGA TGG ATT  
 TCT GTC COT GGA COT GTC COT GAG CTC ACC TAA COT ACC TAA  
 R Q A P G Q G L E W I G W L>

640                      650                      660                      670  
 GAC COT GGA TCT GGA AAT ACA AAG TAC AAT GAG AAG TTC AAG  
 CTG GGA COT AGA COT TTA TGT TTC ATG TTA CTC TTC AAG TTC  
 D P G S G N T K Y N E K F K>

680                      690                      700                      710  
 GGA AGA GCA ACA CTG ACA GTG GAC ACA TCC ACC AAT ACC GGC  
 COT TCT COT TCT GAC TCT CAC CTG TGT AGG TGC TTA TGG CCG  
 G R A T L T V D T S T N T A>

720                      730                      740                      750  
 TAC ATG GAG CTG TCT TCT CTG AGA TCT GAG GAC ACA GCA TTC  
 ATG TAC CTC GAC AGA AGA GAC TCT AGA CTC CTC TCT COT AAG  
 Y M E L S S L R S E D T A F>

760                      770                      780                      790  
 TAC TTC TCT GCA AGA GAG AAG ACC ACC TAC TAC TAC GCA ATG  
 ATG AAG ACA COT TCT CTC TTC TGG TGG ATG ATG ATG COT TAC  
 Y F C A R E R T Y Y Y A M>

800                      810                      820                      830                      840  
 GAC TAC TGG GGA CAG GGA ACA CTC CTC AGA CTC TCT TCT GGC  
 CTC ATG ACC COT CTC COT TCT GAC CAG TCT CAC AGA ACA GGC  
 D Y W S Q S T L V T V C C A>



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## FIG. 4(contd.)

850                      860                      870                      880  
 TCA ACG AAG GGC CCG ACT AGT AAC TCC ATC ATG TAC TTC AGC  
 AGT TGC TTC CCG GGC TGA TCA TTG AGG TAG TAC ATG AAG TCG  
 S T K G P T S N S I M Y F S>  
 890                      900                      910                      920  
 CAC TTC GTG CCG GTC TTC CTG CCA GCG AAG CCC ACC ACG ACG  
 GTG AAG CAC GGC CAG AAG GAC GGT CCG TTC GGG TGG TGC TGC  
 H F V P V F L P A K P T T T>  
 930                      940                      950                      960  
 CCA GCG CCG CCA CCA CCA ACA CCG GCG CCC ACC ATC GCG TCG  
 GGT CCG GGC GGT GGT GGT TGT GCG CCG GGG TGG TAG CCG AGC  
 P A P R P P T P A P T I A S>  
 970                      980                      990                      1000  
 CAG CCC CTG TCC CTG CCG CCA GAG GCG CAG AGC TTT GGC CTG  
 GTC GGG GAC AGG GAC GCG GGT CTC CCG GTC TCG AAA CCG GAC  
 Q P L S L R P E A Q S F G L>  
 1010                      1020                      1030                      1040                      1050  
 CTG GAT CCC AAA CTC TGC TAC CTG CTG GAT GGA ATC CTC TTC  
 GAC CTA GGG TTT GAG ACG ATG GAC GAC CTA COT TAG GAG AAG  
 L D P K L C Y L L D G I L F>  
 1060                      1070                      1080                      1090  
 ATC TAT GGT GTC ATT CTC ACT GCG TTG TTC CTG AGA GTG AAG  
 TAG ATA CCA CAG TAA GAG TGA CCG AAC AAG GAC TGT CAC TTC  
 I Y G V I L T A L F L R V K>  
 1100                      1110                      1120                      1130  
 TTC AGC AGG AGC CCA GAC GCG CCC GCG TAC CAG CAG GGC CAG  
 AAG TCG TCC TCG CGT CTG CCG GGG CCG ATG GTC GTC CCG GTC  
 F S R S A D A P A Y Q Q G Q>  
 1140                      1150                      1160                      1170  
 AAC CAG CTC TAT AAC GAG CTC AAT CTA GGA CCA AGA GAG GAG  
 TTG GTC GAG ATA TTG CTC GAG TTA GAT COT GGT TGT CTC CTC  
 N Q L Y N E L N L G R R E E>  
 1180                      1190                      1200                      1210  
 TAC GAT GTT TTG GAC AAG AGA COT GCG CCG GAC COT GAG ATG  
 ATG CTA CAA AAC CTG TTC TGT GCA CCG GCG CCG GGA CTC TAC  
 Y D V L D K R R G R D P E M>  
 1220                      1230                      1240                      1250                      1260  
 GGG GGA AAG CCG AGA AAG AAG AAC COT CAG GAA GCG CTC TAC  
 CCG COT TTC GCG TGT TCG TTC TTG GGA CTC CTT CCG GAC ATG  
 G G K P R R K N P I E D L Y>

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:

FIG. 4(contd)

|      |     |     |     |      |     |     |     |      |     |     |     |      |     |  |  |
|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|------|-----|--|--|
| 1270 |     |     |     | 1280 |     |     |     | 1290 |     |     |     | 1300 |     |  |  |
| AAT  | GAA | CTG | CAG | AAA  | GAT | AAG | ATG | GCG  | GAG | GCC | TAC | AGT  | GAG |  |  |
| TTA  | CTT | GAC | GTC | TTT  | CTA | TTC | TAC | CGC  | CTC | CGG | ATG | TCA  | CTC |  |  |
| N    | E   | L   | Q   | K    | D   | K   | M   | A    | E   | A   | Y   | S    | E>  |  |  |
| 1310 |     |     |     | 1320 |     |     |     | 1330 |     |     |     | 1340 |     |  |  |
| ATT  | GGG | ATG | AAA | GGC  | GAG | CGC | CGG | AGG  | GGC | AAG | GGG | CAC  | GAT |  |  |
| TAA  | CCC | TAC | TTT | CCG  | CTC | GCG | GCC | TCC  | CCG | TTC | CCC | GTG  | CTA |  |  |
| I    | G   | M   | K   | G    | E   | R   | R   | R    | G   | K   | G   | H    | D>  |  |  |
| 1350 |     |     |     | 1360 |     |     |     | 1370 |     |     |     | 1380 |     |  |  |
| GGC  | CTT | TAC | CAG | GGT  | CTC | AGT | ACA | GCC  | ACC | AAG | GAC | ACC  | TAC |  |  |
| CCG  | GAA | ATG | GTC | CCA  | GAG | TCA | TGT | CGG  | TGG | TTC | CTG | TGG  | ATG |  |  |
| G    | L   | Y   | Q   | G    | L   | S   | T   | A    | T   | K   | D   | T    | Y>  |  |  |
| 1390 |     |     |     | 1400 |     |     |     | 1410 |     |     |     | 1420 |     |  |  |
| GAC  | GCC | CTT | CAC | ATG  | CAG | GCC | CTG | CCC  | CCT | CGC | TAA |      |     |  |  |
| CTG  | CGG | GAA | GTG | TAC  | CTC | CGG | GAC | GGG  | GGA | GCG | ATT |      |     |  |  |
| D    | A   | L   | H   | M    | Q   | A   | L   | P    | P   | R   | *   |      |     |  |  |

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FIG. 5

SEQUENCE OF hCTMO1 CD8 /Zeta-CD28 FUSION RECOMBINANT  
CHIMERIC RECEPTOR

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      10      20      30      40
      *      *      *      *
ATG TCT GTC CCC ACC CAA GTC CTC GGA CTC CTG CTG CTG TGG CTT ACA
TAC AGA CAG GGG TGG GTT CAG GAG CCT GAG GAC GAC ACC GAA TGT
m s v p t q v l g l l l l w l t>

      50      60      70      80      90
      *      *      *      *      *
GAT GCC AGA TGC GAT ATC CAG ATG ACT CAG AGT CCA AGT ACT CTC AGT
CTA CGG TCT ACG CTA TAG GTC TAC TGA GTC TCA GGT TCA TGA GAG TCA
d a f c D I Q M T Q S P S T L S>

     100     110     120     130     140
      *      *      *      *      *
GCC AGT GTA GGT GAT AGG GTC ACC ATC ACT TGT AGG AGT AGT AAA AGT
CGG TCA CAT CCA CTA TCC CAG TGG TAG TGA ACA TCC TCA TCA TTT TCA
A S V G D R V T I T C R S S K S>

     150     160     170     180     190
      *      *      *      *      *
CTC CTC CAT AGT AAC GGT GAC ACC TTC CTC TAT TGG TTC CAG CAG AAA
GAG GAG GTA TCA TTG CCA CTG TGG AAG GAG ATA ACC AAG GTC GTC TTT
L L H S N G D T F L Y W F Q Q K>

     200     210     220     230     240
      *      *      *      *      *
CCA GGT AAA GCC CCA AAG CTC CTC ATG TAT AGG ATG AGT AAC CTC GCC
GGT CCA TTT CGG GGT TTC GAG GAG TAC ATA TCC TAC TCA TTG GAG CGG
P G K A P K L L M Y R M S N L A>

     250     260     270     280
      *      *      *      *
AGT GGT GTA CCA TCT AGA TTC AGT GGT AGT GGT AGT GGT ACT GAG TTC
TCA CCA CAT GGT AGA TCT AAG TCA CCA TCA CCA TCA CCA TGA CTC AAG
S G V P S R F S G S G S G T E F>

    290     300     310     320     330
      *      *      *      *      *
ACT CTC ACT ATC AGT AGT CTC CAG CCA GAT GAT TTC GCC ACT TAT TAT
TGA GAG TGA TAG TCA TCA GAG GTC GGT CTA CTA AAG CGG TGA ATA ATA
T L T I S S L Q P D D F A T Y Y>

     340     350     360     370     380
      *      *      *      *      *
TGT ATG CAG CAT CTC GAA TAT CCA TTC ACT TTC GGT CAG GGT ACT AAA
ACA TAC GTC GTA GAG CTT ATA GGT AAG TGA AAG CCA GTC CCA TGA TTT
C M Q H L E Y P F T F G Q G T K>

     390     400     410     420     430
      *      *      *      *      *
GTA GAA GTA AAA CTT ACG GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA
CAT CTT CAT TTT CCA TGC CCA CCG CCT CCG AGT CCA CCG CCT CCG AGT
V E V H R T G G C G S G S G S G S>

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## FIG. 5(contd.)

440 450 460 470 480  
 GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA CAG  
 CCA CCG COT CCC AGT CCA CCG COT CCC AGT CCA CCG COT CCC AGT GTC  
 G G G G S G G G G S G G G G S Q>

490 500 510 520  
 ATT CAG CTG GTG CAG TCT GGA GCA GAG GTG AAG AAG COT GGA TCT TCT  
 TAA GTC GAC CAC GTC AGA COT COT CTC CAC TTC TTC GGA COT AGA AGA  
 I Q L V Q S G A E V K K P G S S>

530 540 550 560 570  
 GTG AAG GTG TCT TGT AAG GCA TCT GGA TAC ACC TTC ACC GAC TAC TAC  
 CAC TTC CAC AGA ACA TTC COT AGA COT ATG TGG AAG TGG CTG ATG ATG  
 V K V S C K A S G Y T F T D Y Y>

580 590 600 610 620  
 ATT AAT TGG ATG AGA CAG GCA COT GGA CAG GGA CTC GAG TGG ATT GGA  
 TAA TTA ACC TAC TCT GTC COT GGA COT GTC COT GAG CTC ACC TAA COT  
 I N W M R Q A P G Q G L E W I G>

630 640 650 660 670  
 TGG ATT GAC COT GGA TCT GGA AAT ACA AAG TAC AAT GAG AAG TTC AAG  
 ACC TAA CTG GGA COT AGA COT TTA TGT TTC ATG TTA CTC TTC AAG TTC  
 W I D P G S G N T K Y N E K F K>

680 690 700 710 720  
 GGA AGA GCA ACA CTG ACA GTG GAC ACA TCC ACC AAT ACC GGC TAC ATG  
 COT TCT COT TGT GAC TGT CAC CTG TGT AGG TGC TTA TGG CCG ATG TAC  
 G R A T L T V D T S T N T A Y M>

730 740 750 760  
 GAG CTG TCT TCT CTG AGA TCT GAG GAC ACA GCA TTC TAC TTC TGT GCA  
 CTC GAC AGA AGA GAC TCT AGA CTC CTG TGT COT AAG ATG AAG ACA COT  
 E L S S L R S E D T A F Y F C A>

770 780 790 800 810  
 AGA GAG AAG ACC ACC TAC TAC TAC GCA ATG GAC TAC TGG GGA CAG GGA  
 TCT CTC TTC TGT TGT ATG ATG ATG COT TAC CTC ATG ACC COT GTC COT  
 R E K T T Y Y Y A M D Y W G Q G>

820 830 840 850 860  
 ACA CTG GTG ACA GTG TCT TCT GGC TCA ACC AAG GGC CCG ACT ACT AAG  
 TGT GAC CAC TGT CAC AGA AGA CCG ACT TGC TTC CCG GGC TGA TCA TTC  
 T L V T V S S A S T K G P T S N>

870 880 890 900 910  
 TCC ATC ATG TAC TTC AGC CAC TTC GTG CCG CTC TTC CTC CCA GCG AAG  
 AGG TAG TAC ATG AAG TGG GTG CAC CCG CAG AAG GAC GGT CCG TTC  
 S I M Y F E H F V P V F L P A K>

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## FIG. 5(contd.)

920 930 940 950 960  
 CCC ACC ACG ACG CCA GCG CCG CGA CCA CCA ACA CCG GCG CCG ACC ATC  
 GGG TGG TGC TGC GGT CGC GGC GGT GGT TGT GGC CGC GGG TGG TAG  
 P T T T P A P R P P T P A P T I>

970 980 990 1000  
 GCG TCG CAG CCC CTG TCC CTG CGC CCA GAG GCG CAG AGC TTT GGC CTG  
 CGC AGC GTC GGG GAC AGG GAC GCG GGT CTC CGC GTC TCG AAA CCG GAC  
 A S Q P L S L R P E A Q S F G L>

1010 1020 1030 1040 1050  
 CTG GAT CCC AAA CTC TGC TAC CTG CTG GAT CGA ATC CTC TTC ATC TAT  
 GAC CTA GGG TTT GAG ACG ATG GAC GAC CTA COT TAG GAG AAG TAG ATA  
 L D P K L C Y L L D G I L F I Y>

1060 1070 1080 1090 1100  
 GGT GTC ATT CTC ACT GCC TTG TTC CTG AGA GTG AAG TTC AGC AGC AGC  
 CCA CAG TAA GAG TGA CGG AAC AAG GAC TGT CAC TTC AAG TCG TCG TCG  
 G V I L T A L F L R V K F S R S>

1110 1120 1130 1140 1150  
 GCA GAC GCC CCC GCG TAC CAG CAG GGC CAG AAC CAG CTC TAT AAC GAG  
 CGT CTG CCG GGG CGC ATG GTC GTC CCG GTC TTG GTC GAG ATA TTG CTC  
 A D A P A Y Q Q G Q N Q L Y N E>

1160 1170 1180 1190 1200  
 CTC AAT CTA GGA CGA AGA GAG GAG TAC GAT GTT TTG GAC AAG AGA COT  
 GAG TTA GAT COT GGT TGT CTC CTC ATG CTA CAA AAC CTG TTC TGT GCA  
 L N L G R R E E Y D V L D K R R>

1210 1220 1230 1240  
 GGC CCG GAC COT GAG ATG GGG GGA AAG CCG AGA AGG AAG AAC COT CAG  
 CCG GCC CTG GGA CTC TAC CCG COT TTC GGC TGT TCG TTC TTG GGA GTC  
 G R D P E M G G K P R R K N P Q>

1250 1260 1270 1280 1290  
 GAA GGC CTG TAC AAT GAA CTG CAG AAA GAT AAG ATG GCG GAG GCC TAC  
 CTT CCG GAC ATG TTA CTT GAC GTC TTT CTA TTC TAC CCG CTC CCG ATG  
 E G L Y N E L Q K D K M A E A Y>

1300 1310 1320 1330 1340  
 AGT GAG ATT GCG ATG AAA GCG GAG CCG CCG AGG GCG AAG GGG CAC GAT  
 TCA CAG TAA CCG TAC TTT CCG CTC GCG GCG TCG CCG TTC CCG CTG CTA  
 S E I G M K G E R R R G K G H D>

1350 1360 1370 1380 1390  
 GCG CTT TAC CAG GGT CTC ACT ACA GCG ACC AAG GAC ACC TAC GAC GCG  
 CCG GAA ATG CTC CCA GAG TCA TGT CCG TCG TTC CTG TGG ATG CTC CCG  
 G L Y Q G L S T A T K D T Y D A>

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## FIG.5(contd.)

|   |   |      |      |      |      |      |      |      |  |
|---|---|------|------|------|------|------|------|------|--|
| 1400  |   | 1410 |      | 1420 |      | 1430 |      | 1440 |  |
| CTT CAC ATG CAG GCC CTG CCC COT CGC AGG AGT AAG AGG AGC AGG CTC |   |      |      |      |      |      |      |      |  |
| GAA GTG TAC GTC CGG GAC GGG GGA GCG TCC TCA TTC TCC TCG TCC GAG |   |      |      |      |      |      |      |      |  |
| L H M Q A L P P R R S K R S R L>                                |   |      |      |      |      |      |      |      |  |
|   | 1450  |      | 1460 |      | 1470 |      | 1480 |      |  |
|   | CTG CAC AGT GAC TAC ATG AAC ATG ACT CCC CGC CGC CCC GGG CCC ACC |      |      |      |      |      |      |      |  |
|   | GAC GTG TCA CTG ATG TAC TTG TAC TGA GGG GCG GCG GGG CCC GGG TGG |      |      |      |      |      |      |      |  |
|   | L H S D Y M N M T P R R P G P T>                                |      |      |      |      |      |      |      |  |
| 1490  |   | 1500 |      | 1510 |      | 1520 |      | 1530 |  |
| CGC AAG CAT TAC CAG CCC TAT GCC CCA CCA CGC GAC TTC GCA GCC TAT |   |      |      |      |      |      |      |      |  |
| GGG TTC GTA ATG GTC GGG ATA CGG GGT GGT GCG CTG AAG CGT CGG ATA |   |      |      |      |      |      |      |      |  |
| R K H Y Q P Y A P P R D F A A Y>                                |   |      |      |      |      |      |      |      |  |
| 1540  |   |      |      |      |      |      |      |      |  |
| CGC TCC TGA   |   |      |      |      |      |      |      |      |  |
| GCG AGG ACT   |   |      |      |      |      |      |      |      |  |
| R S *   |   |      |      |      |      |      |      |      |  |

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FIG. 6

SEQUENCE OF hCTMO1/CD8/CD28 RECOMBINANT CHIMERIC RECEPTOR

```

      10      20      30      40
      *      *      *      *
ATG TCT GTC CCC ACC CAA GTC CTC GGA CTC CTG CTG CTG TGG
TAC AGA CAG GGG TGG GTT CAG GAG COT GAG GAC GAC GAC ACC
M   S   V   P   T   Q   V   L   G   L   L   L   L   W>

      50      60      70      80
      *      *      *      *
CTT ACA GAT GCC AGA TGC GAT ATC CAG ATG ACT CAG AGT CCA
GAA TGT CTA CCG TCT ACG CTA TAG GTC TAC TGA GTC TCA GGT
L   T   D   A   R   C   D   I   Q   M   T   Q   S   P>

      90      100      110      120
      *      *      *      *
AGT ACT CTC AGT GCC AGT GTA GGT GAT AGG GTC ACC ATC ACT
TCA TGA GAG TCA CCG TCA CAT CCA CTA TCC CAG TGG TAG TGA
S   T   L   S   A   S   V   G   D   R   V   T   I   T>

      130      140      150      160
      *      *      *      *
TGT AGG AGT AGT AAA AGT CTC CTC CAT AGT AAC GGT GAC ACC
ACA TCC TCA TCA TTT TCA GAG GAG GTA TCA TTG CCA CTG TGG
C   R   S   S   K   S   L   L   H   S   N   G   D   T>

      170      180      190      200      210
      *      *      *      *      *
TTC CTC TAT TGG TTC CAG CAG AAA CCA GGT AAA GCC CCA AAG
AAG GAG ATA ACC AAG GTC GTC TTT GGT CCA TTT CCG GGT TTC
F   L   Y   W   F   Q   Q   K   P   G   K   A   P   K>

      220      230      240      250
      *      *      *      *
CTC CTC ATG TAT AGG ATG AGT AAC CTC GCC AGT GGT GTA CCA
GAG GAG TAC ATA TCC TAC TCA TTG GAG CCG TCA CCA CAT GGT
L   L   M   Y   R   M   S   N   L   A   S   G   V   P>

      260      270      280      290
      *      *      *      *
TCT AGA TTC AGT GGT AGT GGT AGT GGT ACT GAG TTC ACT CTC
AGA TCT AAG TCA CCA TCA CCA TCA CCA TGA CTC AAG TGA GAG
S   R   F   S   G   S   G   S   G   T   E   F   T   L>

      300      310      320      330
      *      *      *      *
ACT ATC AGT AGT CTC CAG CCA GAT GAT TTC GCC ACT TAT TAT
TGA TAG TCA TCA GAG GTC GGT CTA CTA AAG CCG TGA ATA ATA
T   I   S   S   L   Q   P   D   D   F   A   T   Y   Y>

      340      350      360      370
      *      *      *      *
TGT ATG CAG CAT CTC GAA TAT CCA TTC ACT TTC GGT CAG GGT
ACA TAC GTC GTA GAG CTT ATA GGT AAG TGA AAG CCA GTC CCA
C   M   Q   H   L   E   V   P   F   T   F   G   L   G>

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## FIG. 6(contd.)

```

380      390      400      410      420
*      *      *      *      *
ACT AAA GTA GAA GTA AAA CCG ACG GGT GGC GGA GGG TCA GGT
TGA TTT CAT CTT CAT TTT GCA TGC CCA CCG CCG CCC AGT CCA
T   K   V   E   V   K   R   T   G   G   G   G   S   G>

      430      440      450      460
*      *      *      *
GGC GGA GGG TCA GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA
CCG CCG CCC AGT CCA CCG CCG CCC AGT CCA CCG CCG CCC AGT
G   G   G   S   G   G   G   S   G   G   G   G   S>

      470      480      490      500
*      *      *      *
GGT GGC GGA GGG TCA CAG ATT CAG CTG GTG CAG TGT GGA GCA
CCA CCG CCG CCC AGT GTC TAA GTC GAC CAC GTC AGA CCG CCG
G   G   G   S   Q   I   Q   L   V   Q   S   G   A>

      510      520      530      540
*      *      *      *
GAG GTG AAG AAG CCG GGA TGT TGT GTG AAG GTG TGT TGT AAG
CTC CAC TTC TTC GGA CCG AGA AGA CAC TTC CAC AGA ACA TTC
E   V   K   K   P   G   S   S   V   K   V   S   C   K>

      550      560      570      580
*      *      *      *
GCA TGT GGA TAC ACC TTC ACC GAC TAC TAC ATT AAT TGG ATG
CGT AGA CCG ATG TGG AAG TGG CTG ATG ATG TAA TTA ACC TAC
A   S   G   Y   T   F   T   D   Y   Y   I   N   W   M>

590      600      610      620      630
*      *      *      *      *
AGA CAG GCA CCG GGA CAG GGA CTC GAG TGG ATT GGA TGG ATT
TGT GTC CCG GGA CCG GTC CCG GAG CTC ACC TAA CCG ACC TAA
R   Q   A   P   G   Q   G   L   E   W   I   G   W   I>

      640      650      660      670
*      *      *      *
GAC CCG GGA TGT GGA AAT ACA AAG TAC AAT GAG AAG TTC AAG
CTG GGA CCG AGA CCG TTA TGT TTC ATG TTA CTC TTC AAG TTC
D   P   G   S   G   N   T   K   Y   N   E   K   F   K>

      680      690      700      710
*      *      *      *
GGA AGA GCA ACA CTG ACA GTG GAC ACA TCG ACC AAT ACC GGC
CGT TGT CCG TGT GAC TGT CAC CTG TGT AGG TCG TTA TCG CCG
G   R   A   T   L   T   V   D   T   S   T   N   T   A>

      720      730      740      750
*      *      *      *
TAC ATG GAG CTG TGT TGT CTG AGA TGT GAG GAC ACA GCA TTC
ATG TAC CTC GAG AGA AGA GAC TGT AGA CTC CTG TGT CCG AAG
Y   M   E   L   S   S   L   R   S   E   D   T   A   F>

      760      770      780      790
*      *      *      *
TAC TTC TGT CCA AGA GAG AAG ACC ACC TAC TAC TAC GCA ATG
ATG AAG ACA CCG TGT CTG TTC TGG TGG ATG ATG ATG CCG TAC
Y   F   D   A   P   E   K   T   T   Y   Y   Y   A   M>

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## FIG. 6(contd.)

800                      810                      820                      830                      840  
 \*                      \*                      \*                      \*                      \*  
 GAC TAC TGG GGA CAG GGA ACA CTG GTG ACA GTG TGT TGT GCC  
 CTG ATG ACC CTT GTC CTT TGT GAC CAC TGT CAC AGA AGA CGG  
 D Y W G Q G T L V T V S S A>  
  
 850                      860                      870                      880  
 \*                      \*                      \*                      \*  
 TCA ACG AAG GGC CCG ACT AGT AAC TCC ATC ATG TAC TTC AGC  
 AGT TGC TTC CCG GGC TGA TCA TTG AGG TAG TAC ATG AAG TCG  
 S T K G P T S N S I M Y F S>  
  
 890                      900                      910                      920  
 \*                      \*                      \*                      \*  
 CAC TTC GTG CCG GTC TTC CTG CCA GCG AAG CCC ACC ACC ACC  
 GTG AAG CAC GGC CAG AAG GAC GGT CCG TTC GGG TGG TGC TGC  
 H F V P V F L P A K P T T T  
  
 930                      940                      950                      960  
 \*                      \*                      \*                      \*  
 CCA GCG CCG CGA CCA CCA ACA CCG GCG CCG ACC ATC GCG TCG  
 GGT CCG GCG GGT GGT GGT TGT GGC CCG GCG TGG TAG CCG AGC  
 P A P R P P T P A P T I A S>  
  
 970                      980                      990                      1000  
 \*                      \*                      \*                      \*  
 CAG CCC CTG TCC CTG CCG CCA GAG GCG GGA TCC AAG CCC TTT  
 GTC GGG GAC AGG GAC GCG GGT CTG CCG CCT AGG TTC GGG AAA  
 Q P L S L R P E A G S K P F>  
  
 1010                      1020                      1030                      1040                      1050  
 \*                      \*                      \*                      \*                      \*  
 TGG GTG CTG GTG GTG GTT GGT GGA GTG CTG GGT TGC TAT AGC  
 ACC CAC GAC CAC CAC CAA CCA CTT CAG GAC CGA ACC ATA TCG  
 W V L V V V G G V L A C Y S>  
  
 1060                      1070                      1080                      1090  
 \*                      \*                      \*                      \*  
 TTG CTA GTA ACA GTG GCC TTT ATT ATT TTC TGG GTG AGG AGT  
 AAC GAT CAT TGT CAC CCG AAA TAA TAA AAG ACC CAC TCC TCA  
 L L V T V A F I I F W V R S>  
  
 1100                      1110                      1120                      1130  
 \*                      \*                      \*                      \*  
 AAG AGG AGC AGG CTC CTG CAC AGT GAC TAC ATG AAC ATG ACT  
 TTC TCC TCG TCC GAG GAC GTG TCA CTG ATG TAC TTC TAC TGA  
 K R S R L L H S D Y M N M T>  
  
 1140                      1150                      1160                      1170  
 \*                      \*                      \*                      \*  
 CCC CCG CCG CCG GGG CCG ACC CCG AAG CAT TAC CAG CCC TAT  
 GGG GCG GCG GCG CCG GCG TGG GCG TTC GTA ATG GTG GGG ATA  
 P R R P G P T R K H Y Q P Y>  
  
 1180                      1190                      1200                      1210  
 \*                      \*                      \*                      \*  
 CCC CCA CCA CCG GAC TTC GCA GCG TAC CCG TCC TGA  
 CCG GGT GGT GCG CTG AAG GGT CCG ATA GCG AGG ACT  
 A P P R D F A A Y R E \*

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FIG. 7

SEQUENCE OF hCTMO1 / G1 / ZETA RECOMBINANT CHIMERIC  
RECEPTOR

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      10      20      30      40
      *      *      *      *
ATG TCT GTC CCC ACC CAA GTC CTC GGA CTC CTC CTC CTC TGG CTT ACA
TAC AGA CAG GGG TGG GTT CAG GAG CCT GAG GAC GAC GAC ACC GAA TGT
M  S  V  P  T  Q  V  L  G  L  L  L  L  W  L  T>

50      60      70      80      90
      *      *      *      *      *
GAT GCC AGA TGC GAT ATC CAG ATG ACT CAG AGT CCA AGT ACT CTC AGT
CTA CGG TCT ACG CTA TAG GTC TAC TGA GTC TCA GGT TCA TGA GAG TCA
D  A  R  C  D  I  Q  M  T  Q  S  P  S  T  L  S>

100      110      120      130      140
      *      *      *      *      *
GCC AGT GTA GGT GAT AGG GTC ACC ATC ACT TGT AGG AGT AGT AAA AGT
CGG TCA CAT CCA CTA TCC CAG TGG TAG TGA ACA TCC TCA TCA TTT TCA
A  S  V  G  D  R  V  T  I  T  C  R  S  S  K  S>

150      160      170      180      190
      *      *      *      *      *
CTC CTC CAT AGT AAC GGT GAC ACC TTC CTC TAT TGG TTC CAG CAG AAA
GAG GAG GTA TCA TTG CCA CTG TGG AAG GAG ATA ACC AAG GTC GTC TTT
L  L  H  S  N  G  D  T  F  L  Y  W  F  Q  Q  K>

200      210      220      230      240
      *      *      *      *      *
CCA GGT AAA GCC CCA AAG CTC CTC ATG TAT AGG ATG AGT AAC CTC GCC
GGT CCA TTT CGG GGT TTC GAG GAG TAC ATA TCC TAC TCA TTG GAG CGG
P  G  K  A  P  K  L  L  M  Y  R  M  S  N  L  A>

250      260      270      280
      *      *      *      *
AGT GGT GTA CCA TCT AGA TTC AGT GGT AGT GGT AGT GGT ACT GAG TTC
TCA CCA CAT GGT AGA TCT AAG TCA CCA TCA CCA TCA CCA TGA CTC AAG
S  G  V  P  S  R  F  S  G  S  G  S  G  T  E  F>

290      300      310      320      330
      *      *      *      *      *
ACT CTC ACT ATC AGT AGT CTC CAG CCA GAT GAT TTC GCC ACT TAT TAT
TGA GAG TGA TAG TCA TCA GAG GTC GGT CTA CTA AAG CGG TGA ATA ATA
T  L  T  I  S  S  L  Q  P  D  D  F  A  T  Y  Y>

340      350      360      370      380
      *      *      *      *      *
TGT ATG CAG CAT CTC GAA TAT CCA TTC ACT TTC GGT CAG GGT ACT AAA
ACA TAC CTC GTA GAG CTT ATA GGT AAG TGA AAG CCA GTC CCA TGA TTT
C  M  Q  H  L  E  Y  P  F  T  F  G  Q  G  T  K>

390      400      410      420      430
      *      *      *      *      *
GTA GAA GTA AAA CCT ACG GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA
CAT CTT CAT TTT GCA TGC CCA CGG CCT CGG AGT CCA CGG CCA GGG TCA
V  E  V  K  R  T  G  G  G  G  S  G  G  S  G  S  S  S>

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## FIG. 7 (contd.)

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      440      450      460      470      480
      *      *      *      *      *
GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA CAG
CCA CCG CCT CCC AGT CCA CCG CCT CCC AGT CCA CCG CCT CCC AGT GTC
G   G   G   G   S   G   G   G   G   S   G   G   G   G   S   Q>

      490      500      510      520
      *      *      *      *
ATT CAG CTG GTG CAG TCT GGA GCA GAG GTG AAG AAG CCT GGA TCT TCT
TAA GTC GAC CAC GTC AGA CCT CGT CTC CAC TTC TTC GGA CCT AGA AGA
I   Q   L   V   Q   S   G   A   E   V   K   K   P   G   S   S>

530      540      550      560      570
      *      *      *      *      *
GTG AAG GTG TCT TGT AAG GCA TCT GGA TAC ACC TTC ACC GAC TAC TAC
CAC TTC CAC AGA ACA TTC CGT AGA CCT ATG TGG AAG TGG CTG ATG ATG
V   K   V   S   C   K   A   S   G   Y   T   F   T   D   Y   Y>

      580      590      600      610      620
      *      *      *      *      *
ATT AAT TGG ATG AGA CAG GCA CCT GGA CAG GGA CTC GAG TGG ATT GGA
TAA TTA ACC TAC TCT GTC CGT GGA CCT GTC CCT GAG CTC ACC TAA CCT
I   N   W   M   R   Q   A   P   G   Q   G   L   E   W   I   Q>

      630      640      650      660      670
      *      *      *      *      *
TGG ATT GAC CCT GGA TCT GGA AAT ACA AAG TAC AAT GAG AAG TTC AAG
ACC TAA CTG GGA CCT AGA CCT TTA TGT TTC ATG TTA CTC TTC AAG TTC
W   I   D   P   G   S   G   N   T   K   Y   N   E   K   F   K>

      680      690      700      710      720
      *      *      *      *      *
GGA AGA GCA ACA CTG ACA GTG GAC ACA TGC ACC AAT ACC CCC TAC ATG
CCT TCT CGT TGT GAC TGT CAC CTG TGT AGG TGC TTA TGG CGG ATG TAC
G   R   A   T   L   T   V   D   T   S   T   N   T   A   Y   M>

      730      740      750      760
      *      *      *      *
GAG CTG TCT TCT CTG AGA TCT GAG GAC ACA GCA TTC TAC TTC TGT GCA
CTC GAC AGA AGA GAC TCT AGA CTC CTG TGT CGT AAG ATG AAG ACA CGT
E   L   S   S   L   R   S   E   D   T   A   F   Y   F   C   A>

770      780      790      800      810
      *      *      *      *      *
AGA GAG AAG ACC ACC TAC TAC TAC GCA ATG GAC TAC TGG GGA CAG GGA
TCT CTC TTC TGG TGG ATG ATG ATG CGT TAC CTG ATG ACC CCT GTC CCT
R   E   K   T   T   Y   Y   Y   A   M   D   Y   W   G   Q   G>

      820      830      840      850      860
      *      *      *      *      *
ACA CTG GTG ACA GTG TCT TCT GCG TCA ACC AAG GGC CGG ACT AGT GAC
TGT GAC CAC TCT CAC AGA AGA CCG AGT TGC TTC CCG GGC TGA TCA CTG
T   L   V   T   V   E   S   A   S   T   K   G   P   T   S   D>

      870      880      890      900      910
      *      *      *      *      *
AAA ACT CAC ACA TGC CCA CCG TGC CCA GCA CCT GAA CTC CTG GGG GGA
TTT TGA GTG TGT ACC GGT GGC ACC GGT CCT GGA CTT GAG GAC CCC CCT
K   T   H   T   C   P   P   C   P   A   P   E   L   L   S   G>

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## FIG. 7 (contd.)

|   |      |      |      |      |
|---|------|------|------|------|
| 920   | 930  | 940  | 950  | 960  |
| CCG TCA GTC TTC CTC TTC CCC CCA AAA CCC AAG GAC ACC CTC ATG ATC |      |      |      |      |
| GGC AGT CAG AAG GAG AAG GGG GGT TTT GGG TTC CTG TGG GAG TAC TAG |      |      |      |      |
| P S V F L F P P K P K D T L M I>                                |      |      |      |      |
| 970   | 980  | 990  | 1000 |      |
| TCC CGG ACC COT GAG GTC ACA TGC GTG GTG GTG GAC GTG AGC CAC GAA |      |      |      |      |
| AGG GCC TGG GGA CTC CAG TGT ACG CAC CAC CAC CTG CAC TCG GTG CTT |      |      |      |      |
| S R T P E V T C V V V D V S H E>                                |      |      |      |      |
| 1010  | 1020 | 1030 | 1040 | 1050 |
| GAC COT GAG GTC AAG TTC AAC TGG TAC GTG GAC GGC GTG GAG GTG CAT |      |      |      |      |
| CTG GGA CTC CAG TTC AAG TTG ACC ATG CAC CTG CCG CAC CTC CAC GTA |      |      |      |      |
| D P E V K F N W Y V D G V E V H>                                |      |      |      |      |
| 1060  | 1070 | 1080 | 1090 | 1100 |
| AAT GGC AAG ACA AAG CGC CGG GAG GAG CAG TAC AAC AGC AGC TAC CGT |      |      |      |      |
| TTA CGG TTC TGT TTC GGC GCC CTC CTC GTC ATG TTG TCG TCG ATG GCA |      |      |      |      |
| N A K T K P R E E Q Y N S T Y R>                                |      |      |      |      |
| 1110  | 1120 | 1130 | 1140 | 1150 |
| GTG GTC AGC GTC CTC ACC GTC CTG CAC CAG GAC TGG CTG AAT GGC AAG |      |      |      |      |
| CAC CAG TCG CAG GAG TGG CAG GAC GTG GTC CTG ACC GAC TTA CCG TTC |      |      |      |      |
| V V S V L T V L H Q D W L N G K>                                |      |      |      |      |
| 1160  | 1170 | 1180 | 1190 | 1200 |
| GAG TAC AAG TGC AAG GTC TCC AAC AAA GCC CTC CCA GCC CCC ATC GAG |      |      |      |      |
| CTC ATG TTC ACG TTC CAG AGG TTG TTT CCG GAG GGT CCG GGG TAG CTC |      |      |      |      |
| E Y K C K V S N K A L P A P I E>                                |      |      |      |      |
| 1210  | 1220 | 1230 | 1240 |      |
| AAA ACC ATC TCC AAA GCC AAA GGG CAG CCC CCA GAA CCA CAG GTG TAC |      |      |      |      |
| TTT TGG TAG AGG TTT CCG TTT CCC GTC GGG GGT CTT GGT GTC CAC ATG |      |      |      |      |
| K T I S K A K G Q P R E P Q V Y>                                |      |      |      |      |
| 1250  | 1260 | 1270 | 1280 | 1290 |
| ACC CTG CCC CCA TCC CGG GAG GAG ATG ACC AAG AAC CAG GTC AGC CTG |      |      |      |      |
| TGG GAC GGG GGT AGG GCC CTC CTC TAC TGG TTC TTG GTC CAG TCG GAC |      |      |      |      |
| T L P P S R E E M T K N Q V S L>                                |      |      |      |      |
| 1300  | 1310 | 1320 | 1330 | 1340 |
| ACC TCC CTG GTC AAA GGC TTC TAT CCC AGC GAC ATC CCC GTG GAG TGG |      |      |      |      |
| TGG ACC GAC CAG TTT CCG AAG ATA GGG TCG CTC TAG CCG CAC CTC ACC |      |      |      |      |
| T C L V K G F Y P S D I A V E W>                                |      |      |      |      |
| 1350  | 1360 | 1370 | 1380 | 1390 |
| GAG AGC AAT GGG CAG CGG GAG AAC AAC TAC AAG ACC ACC COT CCC CTG |      |      |      |      |
| CTC TCG TTA CCC CTC GGC CTC TTG TTG ATG TTC TGG TCG GGA GGG CAC |      |      |      |      |
| E S N S C P E N N Y K T T P F V>                                |      |      |      |      |
| 1400  | 1410 | 1420 | 1430 | 1440 |
| CTG GAC TCC GAC GGC TCC TTC TTC CTC TAC AGC AAG CTC ACC GTG GAC |      |      |      |      |
| GAC CTC AGG CTC CCG AGG AAG AAG GAG ATG TCG TTC GAG TGG CAC CTC |      |      |      |      |
| L D S D G S F F L Y S K L T V D>                                |      |      |      |      |

## 21/40 FIG. 7(contd.)

1450 1460 1470 1480  
AAG AGC AGG TGG CAG CAG GGG AAC GTC TTC TCA TGC TGC GTG ATG CAT  
TTC TCG TCC ACC GTC GTC CCC TTG CAG AAG AGT ACG AGG CAC TAC GTA  
K S R W Q Q G N V F S C S V M H>

1490 1500 1510 1520 1530  
GAG GGT CTG CAC AAC CAC TAC ACG CAG AAG AGC CTC TCC CTG TCT CCG  
CTC CGA GAC GTG TTG GTG ATG TGC GTC TTC TCG GAG AGG GAC AGA GGC  
E A L H N H Y T Q K S L S L S P>

1540 1550 1560 1570 1580  
GGT AAA CTG GAT CCC AAA CTC TGC TAC CTG CTG GAT GGA ATC CTC TTC  
CCA TTT GAC CTA GGG TTT GAG ACG ATG GAC GAC CTA COT TAG GAG AAG  
G K L D P K L C Y L L D G I L F>

1590 1600 1610 1620 1630  
ATC TAT GGT GTC ATT CTC ACT GCC TTG TTC CTG AGA GTG AAG TTC AGC  
TAG ATA CCA CAG TAA GAG TGA CCG AAC AAG GAC TCT CAC TTC AAG TCG  
I Y G V I L T A L F L R V K F S>

1640 1650 1660 1670 1680  
AGG AGC GCA GAC GCC CCC GCG TAC CAG CAG GGC CAG AAC CAG CTC TAT  
TCC TCG CGT CTG CCG GGG CCG ATG GTC GTC CCG GTC TTG GTC GAG ATA  
R S A D A P A Y Q Q G Q N Q L Y>

1690 1700 1710 1720  
AAC GAG CTC AAT CTA GGA CGA AGA GAG GAG TAC GAT GTT TTG GAC AAG  
TTG CTC GAG TTA GAT COT GGT TCT CTC CTC ATG CTA CAA AAC CTG TTC  
N E L N L G R R E E Y D V L D K>

1730 1740 1750 1760 1770  
AGA CGT GCC CCG GAC COT GAG ATG GGG GGA AAG CCG AGA AGG AAG AAC  
TOT GCA CCG GCC CTG GGA CTC TAC CCG COT TTC GGC TOT TCC TTC TTG  
R R G R D P E M G G K P R R K N>

1780 1790 1800 1810 1820  
COT CAG GAA GGC CTG TAC AAT GAA CTG CAG AAA GAT AAG ATG GCG GAG  
GGA GTC CTT CCG GAC ATG TTA CTT GAC GTC TTT CTA TTC TAC CCG CTC  
P Q E G L Y N E L Q K D K M A E>

1830 1840 1850 1860 1870  
GCC TAC AGT GAG ATT GCG ATG AAA GGC GAG CCG CCG AGG GGC AAG GGC  
CGG ATG TCA CTC TAA CCC TAC TTT CCG CTC GCG GCG TCC CCG TTC CCC  
A Y S E I G M K G E R R R G K G>

1880 1890 1900 1910 1920  
CAC GAT GGC CTT TAC CAG GGT CTC AGT ACA GGC ACC AAG GAC ACC TAC  
GTG CTA CCG GAA ATG CTC CCA GAG TCA TOT CCG TCG TTC CTG TCG ATG  
H D G L Y Q G L S T A T K D T Y>

1930 1940 1950  
GAC GCC CTT CAC ATG CAG GGC CTG CCG COT CCG TAA  
CTG CCG GAA GTG TAC CTC CCG GAC GCG GGA GCG ATT  
D A L H M Q A L P P R

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FIG. 8  
SEQUENCE OF hCTMO1/G1/ZETA-CD28 FUSION RECOMBINANT  
CHIMERIC RECEPTOR

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      10      20      30      40
      *      *      *      *
ATG TCT GTC CCC ACC CAA GTC CTC GGA CTC CTG CTG CTG TGG CTT ACA
TAC AGA CAG GGG TGG GTT CAG GAG CCT GAG GAC GAC GAC ACC GAA TGT
M   S   V   P   T   Q   V   L   G   L   L   L   L   W   L   T>

50      60      70      80      90
      *      *      *      *      *
GAT GGC AGA TGC GAT ATC CAG ATG ACT CAG AGT CCA AGT ACT CTC AGT
CTA CGG TGT ACG CTA TAG GTC TAC TGA GTC TCA GGT TCA TGA GAG TCA
D   A   R   C   D   I   Q   M   T   Q   S   P   S   T   L   S>

100     110     120     130     140
      *      *      *      *      *
GCC AGT GTA GGT GAT AGG GTC ACC ATC ACT TGT AGG AGT AGT AAA AGT
CGG TCA CAT CCA CTA TCC CAG TGG TAG TGA ACA TCC TCA TCA TTT TCA
A   S   V   G   D   R   V   T   I   T   C   R   S   S   K   S>

150     160     170     180     190
      *      *      *      *      *
CTC CTC CAT AGT AAC GGT GAC ACC TTC CTC TAT TGG TTC CAG CAG AAA
GAG GAG GTA TCA TTC CCA CTG TGG AAG GAG ATA ACC AAG GTC GTC TTT
L   L   H   S   N   G   D   T   F   L   Y   W   F   Q   Q   K>

200     210     220     230     240
      *      *      *      *      *
CCA GGT AAA GCC CCA AAG CTC CTC ATG TAT AGG ATG AGT AAC CTC GCC
GGT CCA TTT CGG GGT TTC GAG GAG TAC ATA TCC TAC TCA TTT GAG CGG
P   G   K   A   P   K   L   L   M   Y   R   M   S   N   L   A>

250     260     270     280
      *      *      *      *
AGT GGT GTA CCA TGT AGA TTC AGT GGT AGT GGT AGT GGT ACT GAG TTC
TCA CCA CAT GGT AGA TGT AAG TCA CCA TCA CCA TCA CCA TGA CTC AAG
S   G   V   P   S   R   F   S   G   S   G   S   G   T   E   F>

290     300     310     320     330
      *      *      *      *      *
ACT CTC ACT ATC AGT AGT CTC CAG CCA GAT GAT TTC GGC ACT TAT TAT
TGA GAG TGA TAG TCA TCA GAG GTC GGT CTA CTA AAG CGG TGA ATA ATA
T   L   T   I   S   S   L   Q   P   D   D   F   A   T   Y   Y>

340     350     360     370     380
      *      *      *      *      *
TGT ATG CAG CAT CTC GAA TAT CCA TTC ACT TTC GGT CAG GGT AGT AAA
ACA TAC CTC GTA GAG CTT ATA GGT AAG TGA AAG CCA GTC CCA TGA TTT
C   M   Q   H   L   E   Y   P   F   T   F   G   Q   G   T   K>

390     400     410     420     430
      *      *      *      *      *
GTA GAA GTA AAA COT ACG GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA
CAT CTT CMT TTT GCA TCC CCA CGG COT GGC AGT CCA CGG GGT GGC AGT
V   E   V   R   R   T   G   G   G   G   S   G   G   G   G   G   S>

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## FIG. 8(contd.)

440 450 460 470 480  
 GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA CAG  
 CCA CCG CCG CCC AGT CCA CCG CCG CCC AGT CCA CCG CCG CCC AGT GTC  
 G G G G S G G G S G G G G S Q>  
 490 500 510 520  
 ATT CAG CTG GTG CAG TCT GGA GCA GAG GTG AAG AAG CCG GGA TCT TCT  
 TAA GTC GAC CAC GTC AGA CCG CGT CTC CAC TTC TTC GGA CCG AGA AGA  
 I Q L V Q S G A E V K K P G S S>  
 530 540 550 560 570  
 GTG AAG CTG TCT TCT AAG GCA TCT GGA TAC ACC TTC ACC GAC TAC TAC  
 CAC TTC CAC AGA ACA TTC CGT AGA CCG ATG TGG AAG TGG CTG ATG ATG  
 V K V S C K A C G Y T F T D Y Y>  
 580 590 600 610 620  
 ATT AAT TGG ATG AGA CAG GCA CCG GGA CAG GGA CTC GAG TGG ATT GGA  
 TAA TTA ACC TAC TCT GTC CGT GGA CCG GTC CCG GAG CTC ACC TAA CCG  
 I N W M R Q A P G Q G L E W I G>  
 630 640 650 660 670  
 TGG ATT GAC CCG GGA TCT GGA AAT ACA AAG TAC AAT GAG AAG TTC AAG  
 ACC TAA CTG GGA CCG AGA CCG TTA TGT TTC ATG TTA CTC TTC AAG TTC  
 W I D P G S G N T K Y N E K F K>  
 680 690 700 710 720  
 GGA AGA GCA ACA CTG ACA GTG GAC ACA TCG ACG AAT ACC GCG TAC ATG  
 CCG TCT CCG TGT GAC TGT CAC CTG TGT AGG TCG TTA TGG CCG ATG TAC  
 G R A T L T V D T S T N T A Y M>  
 730 740 750 760  
 GAG CTG TCT TCT CTG AGA TCT GAG GAC ACA GCA TTC TAC TTC TGT GCA  
 CTC GAC AGA AGA GAC TCT AGA CTC CTG TGT CCG AAG ATG AAG ACA CCG  
 E L S S L R S E D T A F Y F C A>  
 770 780 790 800 810  
 AGA GAG AAG ACC ACC TAC TAC TAC GCA ATG GAC TAC TGG GGA CAG GGA  
 TCT CTC TTC TGG TGG ATG ATG ATG CCG TAC CTG ATG ACC CCG GTC CCG  
 R E K T T Y Y Y A M D Y W G Q G>  
 820 830 840 850 860  
 ACA CTG GTG ACA CTG TCT TCT GCG TCA ACG AAG GCG CCG ACT ACT GAC  
 TGT GAC CAC TCT CAC AGA AGA CCG ACT TCG TTC CCG GCG TGA TCA CTG  
 T L V T V S S A S T K G P T S D>  
 870 880 890 900 910  
 AAA ACT CAC ACA TCG CCA CCG TCG CCA GCA CCG GAA CTC CTC GCG GGA  
 TTT TGA GTG TGT ACC CCG CCG ACC CCG CCG GGA CTT GAG GAC CCG CCG  
 K T H T C P P C P A P E L L S S>

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FIG. 8(contd.)

|   |   |                                  |      |      |
|---|---|----------------------------------|------|------|
| 920   | 930   | 940                              | 950  | 960  |
| CCG TCA GTC TTC CTC TTC CCG CCA AAA CCG AAG GAC ACC CTC ATG ATC | GGC AGT CAG AAG GAG AAG GGG GGT TTT GGG TTC CTC TGG GAG TAC TAG | P S V F L F P P K P K D T L M I> |      |      |
| 970   | 980   | 990                              | 1000 |      |
| TCC CCG ACC CCG GAG GTC ACA TGC GTG GTG GTG GAC GTG AGC CAC GAA | AGG GCC TGG GGA CTC CAG TGT ACG CAC CAC CAC CTC CAC TCG GTG CTT | S R T P E V T C V V V D V S H E> |      |      |
| 1010  | 1020  | 1030                             | 1040 | 1050 |
| GAC CTT GAG GTC AAG TTC AAC TGG TAC GTG GAC GGC GTG GAG GTG CAT | CTG GGA CTC CAG TTC AAG TTG ACC ATG CAC CTG CCG CAC CTC CAC GTA | D P E V K F N W Y V D G V E Y H> |      |      |
| 1060  | 1070  | 1080                             | 1090 | 1100 |
| AAT GCC AAG ACA AAG CCG CCG GAG GAG CAG TAC AAC ACC ACC TAC CCG | TTA CCG TTC TGT TTC GGC GCC CTC CTC GTC ATG TTG TCG TGC ATG GCA | N A K T K P R E E Q Y N S T Y R> |      |      |
| 1110  | 1120  | 1130                             | 1140 | 1150 |
| GTG GTC AGC GTC CTC ACC GTC CTC CAC CAG GAC TGG CTC AAT GGC AAG | CAC CAG TCG CAG GAG TGG CAG GAC GTG GTC CTC ACC GAC TTA CCG TTC | V V S V L T V L H Q D W L N G K> |      |      |
| 1160  | 1170  | 1180                             | 1190 | 1200 |
| GAG TAC AAG TGC AAG GTC TCC AAC AAA GCC CTC CCA GCC CCC ATC GAG | CTC ATG TTC ACG TTC CAG AGG TTG TTT CCG GAG GGT CCG GGG TAG CTC | E Y K C K V S N K A L P A P I E> |      |      |
| 1210  | 1220  | 1230                             | 1240 |      |
| AAA ACC ATC TCC AAA GCC AAA GGG CAG CCG CCA GAA CCA CAG GTG TAC | TTT TGG TAG AGG TTT CCG TTT CCG GTC GGG GGT CTT GGT GTC CAC ATG | K T I S K A K G Q P R E P Q V Y> |      |      |
| 1250  | 1260  | 1270                             | 1280 | 1290 |
| ACC CTC CCG CCA TCC CCG GAG GAG ATG ACC AAG AAC CAG GTC AGC CTC | TGG GAC GGG GGT AGG GCC CTC CTC TAC TGG TTC TTG GTC CAG TCG GAC | T L P P S R E E M T K N Q V S L> |      |      |
| 1300  | 1310  | 1320                             | 1330 | 1340 |
| ACC TGC CTC GTC AAA GGC TTC TAT CCG ACC GAC ATC CCG GTG GAG TGG | TGG ACC GAC CAG TTT CCG AAG ATA GGG TCG CTC TAG CCG CAC CTC ACC | T C L V K D F Y P S D I A V E W> |      |      |
| 1350  | 1360  | 1370                             | 1380 | 1390 |
| GAG ACC AAT GGG CAG CCG GAG AAG AAC TAC AAG ACC ACG CCG CCG CTC | CTC TCG TTA CCG CTC GGC CTC TTG TTG ATG TTC TGG TCG CCA GGG CAC | E S N S Q P E N N Y K T T P P V> |      |      |
| 1400  | 1410  | 1420                             | 1430 | 1440 |
| CTG GAC TCC GAC CCG TCC TTC TTC CTC TAC ACC AAG CTC ACC GTG GAC | GAC CTC AGG CTC CCG AGG AAG AAG GAG ATG TCG TTC GAG TCG CAC CTC | L D S D G S F F L Y S H L T V D> |      |      |



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FIG 8(contd.)

1450 1460 1470 1480  
 AAG AGC AGG TCG CAG CAG GGG AAC GTC TTC TCA TGC TCC GTG ATG CAT  
 TTC TCG TCC ACC GTC GTC CCC TTG CAG AAG AGT ACG AGG CAC TAC GTA  
 K S R W Q Q G N V F S C S V M H>

1490 1500 1510 1520 1530  
 GAG GGT CTG CAC AAC CAC TAC ACG CAG AAG AGC CTC TCC CTG TCT CCC  
 CTC CGA GAC GTG TTG GTG ATG TGC GTC TTC TCG GAG AGG GAC AGA GGC  
 E A L H N H Y T Q K S L S L S P>

1540 1550 1560 1570 1580  
 GGT AAA CTG GAT CCC AAA CTC TGC TAC CTG CTG GAT GGA ATC CTC TTC  
 CGA TTT GAC CTA GGG TTT GAG ACG ATG GAC GAC CTA COT TAG GAG AAG  
 G H L D P K L C Y L L D G I L F>

1590 1600 1610 1620 1630  
 ATC TAT GGT GTC ATT CTC ACT GCC TTG TTC CTG AGA GTG AAG TTC AGC  
 TAG ATA CGA CAG TAA GAG TGA CCG AAC AAG GAC TCT CAC TTC AAG TCG  
 I Y G V I L T A L F L R V K F S>

1640 1650 1660 1670 1680  
 AGG AGC GCA GAC GCC CCC GCG TAC CAG CAG GGC CAG AAC CAG CTC TAT  
 TCC TCG COT CTG CCG GGG CGC ATG GTC GTC CCG GTC TTG GTC GAG ATA  
 R S A D A P A Y Q Q G Q N Q L Y>

1690 1700 1710 1720  
 AAC GAG CTC AAT CTA GGA CGA AGA GAG GAG TAC GAT GTT TTG GAC AAG  
 TTG CTC GAG TTA GAT COT GGT TGT CTC CTC ATG CTA CAA AAC CTG TTC  
 N E L N L G R R E E V D V L D K>

1730 1740 1750 1760 1770  
 AGA COT GGC CGG GAC COT GAG ATG GGG GGA AAG CCC AGA AGG AAG AAC  
 TCT GCA CCG GCG CTG GGA CTC TAC CCC COT TTC GGC TCT TCC TTC TTG  
 R R G R D P E M G G K P R R K N>

1780 1790 1800 1810 1820  
 COT CAG GAA GGC CTG TAC AAT GAA CTG CAG AAA GAT AAG ATG GCG GAG  
 GGA GTC CTT CCG GAC ATG TTA CTT GAC GTC TTT CTA TTC TAC CCG CTC  
 P Q E G L Y N E L Q K D K M A E>

1830 1840 1850 1860 1870  
 GCC TAC AGT GAG ATT GGG ATG AAA GGC GAG CCC CCG AGG GGC AAG GGC  
 CCG ATG TCA CTC TAA CCG TAC TTT CCG CTC GCG CCG TCC CCG TTC CCC  
 A Y S E I G M H G E R R R G H G>

1880 1890 1900 1910 1920  
 CAC GAT GGC CTT TAC CAG GGT CTC AGT ACA GGC ACC AAG GAC ACC TAC  
 GTG CTA CCG GAA ATG CTC CGA GAG TCA TGT CCG TCG TTC CTG TCG ATG  
 H D G L I I G L D T A T F C T T>

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|      |      |      |      |      |     |      |     |      |     |     |     |     |     |     |     |     |
|------|------|------|------|------|-----|------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|
|      | 1930 | 1940 | 1950 | 1960 |     |      |     |      |     |     |     |     |     |     |     |     |
|      | GAC  | GCC  | CTT  | CAC  | ATG | CAG  | GCC | CTG  | CCC | CCT | CGC | AGG | AGT | AAG | AGG | AGC |
|      | CTG  | CGG  | GAA  | GTG  | TAC | GTC  | CGG | GAC  | GGG | GGA | GCG | TCC | TCA | TTC | TCC | TCG |
|      | D    | A    | L    | H    | M   | Q    | A   | L    | P   | P   | R   | R   | S   | K   | R   | S>  |
| 1970 |      | 1980 |      | 1990 |     | 2000 |     | 2010 |     |     |     |     |     |     |     |     |
|      | AGG  | CTC  | CTG  | CAC  | AGT | GAC  | TAC | ATG  | AAC | ATG | ACT | CCC | CGC | CGC | CCC | GGG |
|      | TCC  | GAG  | GAC  | GTG  | TCA | CTG  | ATG | TAC  | TTG | TAC | TGA | GGG | GGG | GGG | GGG | CCC |
|      | R    | L    | L    | H    | S   | D    | Y   | M    | N   | M   | T   | P   | R   | R   | P   | G>  |
| 2020 |      | 2030 |      | 2040 |     | 2050 |     | 2060 |     |     |     |     |     |     |     |     |
|      | CCC  | ACC  | CGC  | AAG  | CAT | TAC  | CAG | CCC  | TAT | GCC | CCA | CCA | CGC | GAC | TTC | GCA |
|      | GGG  | TGG  | GCG  | TTC  | GTA | ATG  | GTC | GGG  | ATA | CGG | GGT | GGT | GGG | CTG | AAG | CCT |
|      | P    | T    | R    | K    | H   | Y    | Q   | P    | Y   | A   | P   | P   | R   | D   | F   | A>  |
| 2070 |      |      |      |      |     |      |     |      |     |     |     |     |     |     |     |     |
|      | GCC  | TAT  | CGC  | TCC  | TGA |      |     |      |     |     |     |     |     |     |     |     |
|      | CGG  | ATA  | GCG  | AGG  | ACT |      |     |      |     |     |     |     |     |     |     |     |
|      | A    | Y    | R    | S    | *   |      |     |      |     |     |     |     |     |     |     |     |

FIG. 8 (contd.)

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## FIG. 9

SEQUENCE OF hCTMOL / h CD28 RECOMBINANT CHIMERIC  
RECEPTOR

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      10      20      30      40
      *      *      *      *
ATG TGT GTC CCC ACC CAA GTC CTC GGA CTC CTG CTG CTG CTG CTT ACA
TAC AGA CAG GGG TGG GTT CAG GAG CCT GAG GAC GAC GAC ACC GAA TGT
M S V P T Q V L G L L L L W L T>

50      60      70      80      90
      *      *      *      *      *
GAT GGC AGA TGC GAT ATC CAG ATG ACT CAG AGT CCA AGT ACT CTC AGT
CTA CGG TGT ACC CTA TAG CTC TAC TGA CTC TCA GGT TCA TGA GAG TCA
D A R C D I Q M T C C P C T L D>

100     110     120     130     140
      *      *      *      *      *
GCC AGT GTA GGT GAT AGG GTC ACC ATC ACT TGT AGG AGT AGT AAA AGT
CGG TCA CAT CCA CTA TCC CAG TGG TAG TGA ACA TCC TCA TCA TTT TCA
A S V G D R V T I T C R S S K S>

150     160     170     180     190
      *      *      *      *      *
CTC CTC CAT AGT AAC GGT GAC ACC TTC CTC TAT TGG TTC CAG CAG AAA
GAG GAG GTA TCA TTG CCA CTG TGG AAG GAG ATA ACC AAG CTC CTC TTT
L L H S N G D T F L Y W F Q Q K>

200     210     220     230     240
      *      *      *      *      *
CCA GGT AAA GCC CCA AAG CTC CTC ATG TAT AGG ATG AGT AAC CTC GCC
GGT CCA TTT CGG GGT TTC GAG GAG TAC ATA TCC TAC TCA TTG GAG CGG
P G K A P K L L M Y R M C N L A>

250     260     270     280
      *      *      *      *
AGT GGT GTA CCA TGT AGA TTC AGT GGT AGT GGT AGT GGT AGT GAG TTC
TCA CCA CAT GGT AGA TGT AAG TCA CCA TCA CCA TCA CCA TGA CTC AAG
S G V P S R F S G S G S G T E F>

290     300     310     320     330
      *      *      *      *      *
ACT CTC ACT ATC AGT AGT CTC CAG CCA GAT GAT TTC GGC ACT TAT TAT
TGA GAG TGA TAG TCA TCA GAG CTC GGT GGT CTA CTA AAG CGG TGA ATA ATA
T L T I S S L Q P D D F A T Y Y>

340     350     360     370     380
      *      *      *      *      *
TGT ATG CAG CAT CTC GAA TAT CCA TTC ACT TTC GGT CAG GGT ACT AAA
ACA TAC CTC GTA GAG CTT ATA GGT AAG TGA AAG CCA CTC CCA TGA TTT
C M Q H L E Y P F T F G L G T K>

390     400     410     420     430
      *      *      *      *      *
GTA GAA GTA AAA COT ACC GGT GGC GGA GGG TCA GGT GGC GGA GGG CCA
CAT CTT CAT TTT CCA TCC CCA CCG COT CCG AGT CCA CCG COT CCG AGT
V E V K R T G G G G L G G G S>

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FIG. 9 (contd.)

440 450 460 470 480  
 GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA GGT GGC GGA GGG TCA CAG  
 CCA CCG CCT CCC AGT CCA CCG CCT CCC AGT CCA CCG CCT CCC AGT GTC  
 G G G G S G G G G S G G G G S Q>

490 500 510 520  
 ATT CAG CTG GTG CAG TCT GGA GCA GAG GTG AAG AAG COT GGA TCT TCT  
 TAA GTC GAC CAC CTC AGA COT COT CTC CAC TTC TTC GGA COT AGA AGA  
 I Q L V Q S G A E V K K P G S S>

530 540 550 560 570  
 GTG AAG GTG TCT TCT AAG GCA TCT GGA TAC ACC TTC ACC GAC TAC TAC  
 CAC TTC CAC AGA ACA TTC COT AGA COT ATG TGG AAG TGG CTC ATG ATG  
 V K V D D K A S G V T F T D Y Y>

580 590 600 610 620  
 ATT AAT TGG ATG AGA CAG GCA COT GGA CAG GGA CTC GAG TGG ATT GGA  
 TAA TTA ACC TAC TCT GTC COT GGA COT CTC COT GAG CTC ACC TAA COT  
 I N W M R Q A P G Q G L E W I G>

630 640 650 660 670  
 TGG ATT GAC COT GGA TCT GGA AAT ACA AAG TAC AAT GAG AAG TTC AAG  
 ACC TAA CTC GGA COT AGA COT TTA TGT TTC ATG TTA CTC TTC AAG TTC  
 W I D P G S G N T K Y N E K F K>

680 690 700 710 720  
 GGA AGA GCA ACA CTC ACA GTG GAC ACA TCC ACC AAT ACC GGC TAC ATG  
 COT TCT COT TGT GAC TGT CAC CTC TGT AGG TGG TTA TGG CCG ATG TAC  
 G R A T L T V D T S T N T A T M>

730 740 750 760  
 GAG CTG TCT TCT CTC AGA TCT GAG GAC ACA GCA TTC TAC TTC TGT GCA  
 CTC GAC AGA AGA GAC TCT AGA CTC CTC TGT COT AAG ATG AAG ACA COT  
 E L S S L R S E D T A F Y F C A>

770 780 790 800 810  
 AGA GAG AAG ACC ACC TAC TAC TAC GCA ATG GAC TAC TGG GGA CAG GGA  
 TCT CTC TTC TGG TGG ATG ATG ATG COT TAC CTC ATG ACC COT GTC COT  
 R E K T T Y Y Y A M D Y W G I G>

820 830 840 850 860  
 ACA CTC GTG ACA CTC TCT TCT GGC TCA ACC AAG GGC CCG ACT ACT GAC  
 TCT GAC CAC TCT CAC AGA AGA CCG ACT TGG TTC CCG GGC TGA TGA CTC  
 T L V T V S S A D T K D P T S D>

870 880 890 900 910  
 AAA ACT CAC ACA TGC CCA CCG TGC CCA AAA GGC AAA CAC CTT TCT CCA  
 TTT TCA CTC TCT ACC GGT CCG ACC GGT TTT CCG TTT CTC GAA ACA GGT  
 K T H T C P P C P K G V H L C P>

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```

          920          930          940          950          960
          *          *          *          *          *
AGT CCC CTA TTT CCC GGA CCT TCT AAG CCC TTT TGG GTG CTG GTG GTG
TCA GGG GAT AAA GGG CTT GGA AGA TTC GGG AAA ACC CAC GAC CAC CAC
S   P   L   F   P   G   P   S   K   P   F   W   V   L   V   V>

          970          980          990          1000
          *          *          *          *
GTT GGT GGA GTC CTG GCT TGC TAT AGC TTG CTA GTA ACA GTG GCC TTT
CAA CCA CCT CAG GAC CGA ACG ATA TCG AAC GAT CAT TGT CAC CGG AAA
V   G   G   V   L   A   C   Y   S   L   L   V   T   V   A   F>

1010          1020          1030          1040          1050
*          *          *          *          *
ATT ATT TTC TGG GTG AGG AST AAG AGG AGC AGG CTC CTG CAC AST GAC
TAA TAA AAG ACC CAC TCC TCA TTC TCC TCC GAG GAC GTG TCA CTG
I   I   F   W   V   E   S   K   R   S   R   L   L   H   C   D>

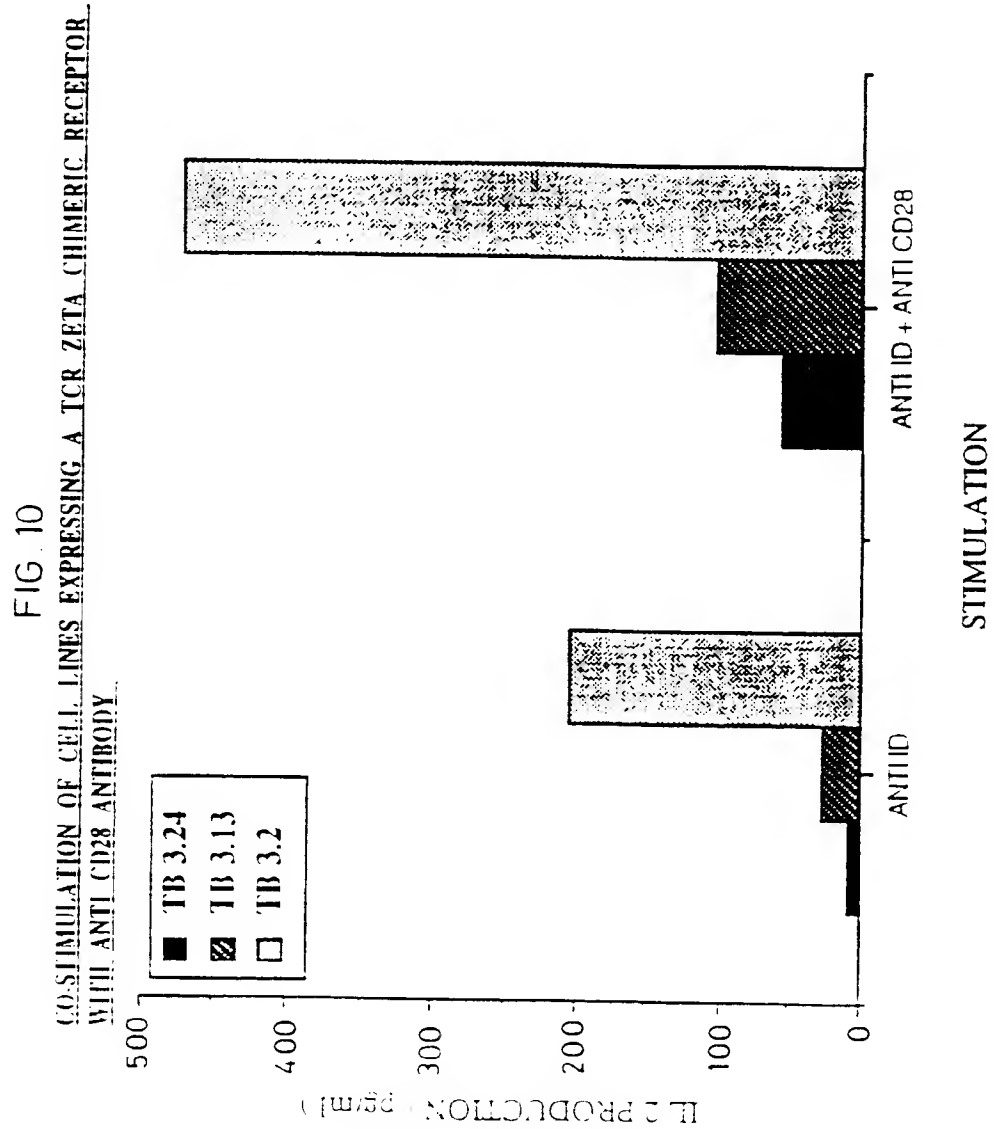
1060          1070          1080          1090          1100
          *          *          *          *          *
TAC ATG AAC ATG ACT CCC CGC CGC CCC GGG CCC ACC CGC AAG CAT TAC
ATG TAC TTG TAC TGA GGG GCG GCG GGG CCC GGG TGG GCG TTC GTA ATG
Y   M   N   M   T   P   R   R   P   G   P   T   R   K   H   Y>

1110          1120          1130          1140
          *          *          *          *
CAG CCC TAT GCC CCA CCA CGC GAC TTC GCA GCC TAT CGC TCC TGA
GTC GGG ATA CGG GGT GGT GCG CTG AAG CGT CGG ATA GCG AGG ACT
Q   P   Y   A   P   P   R   D   F   A   A   Y   R   S   *

```

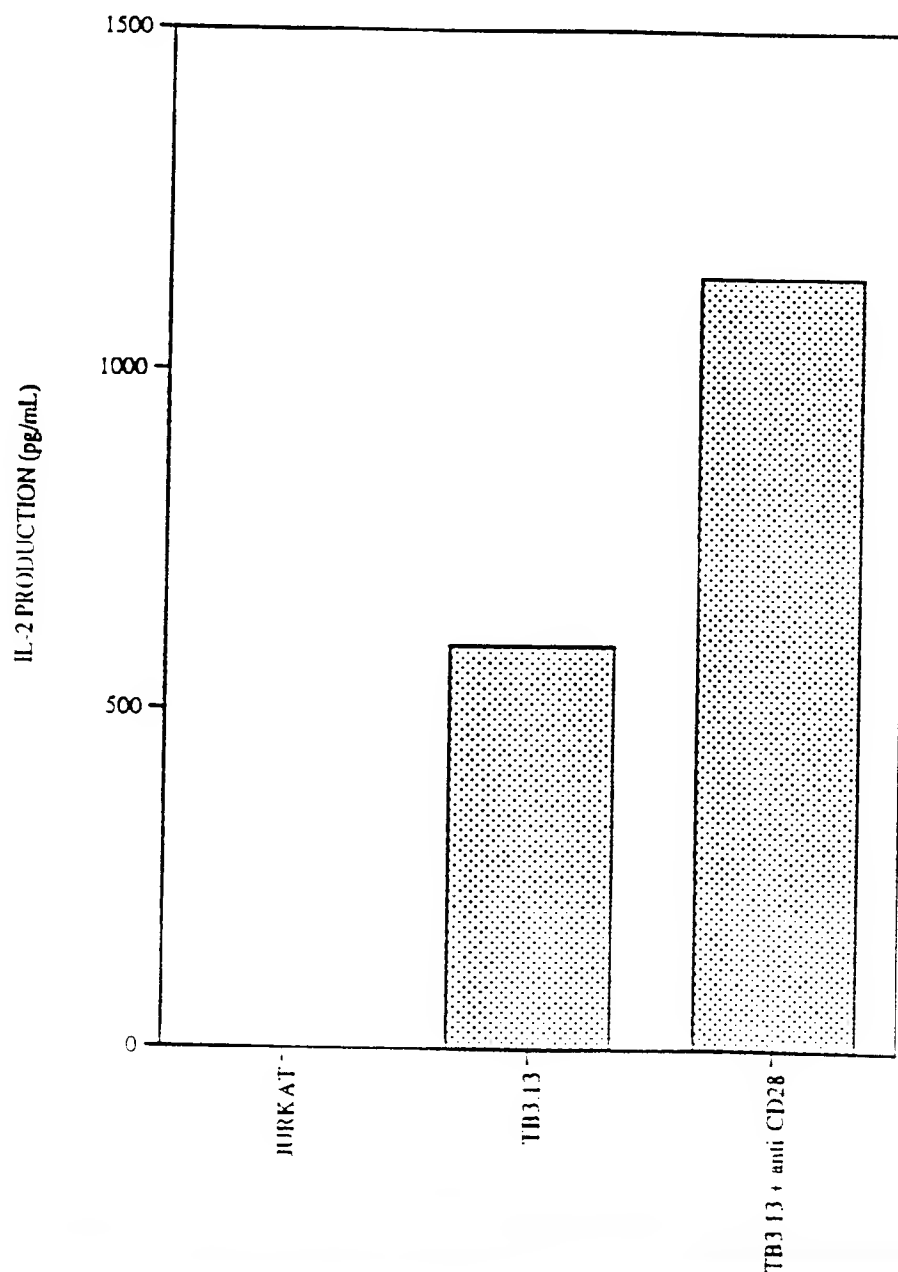
FIG. 9(contd.)

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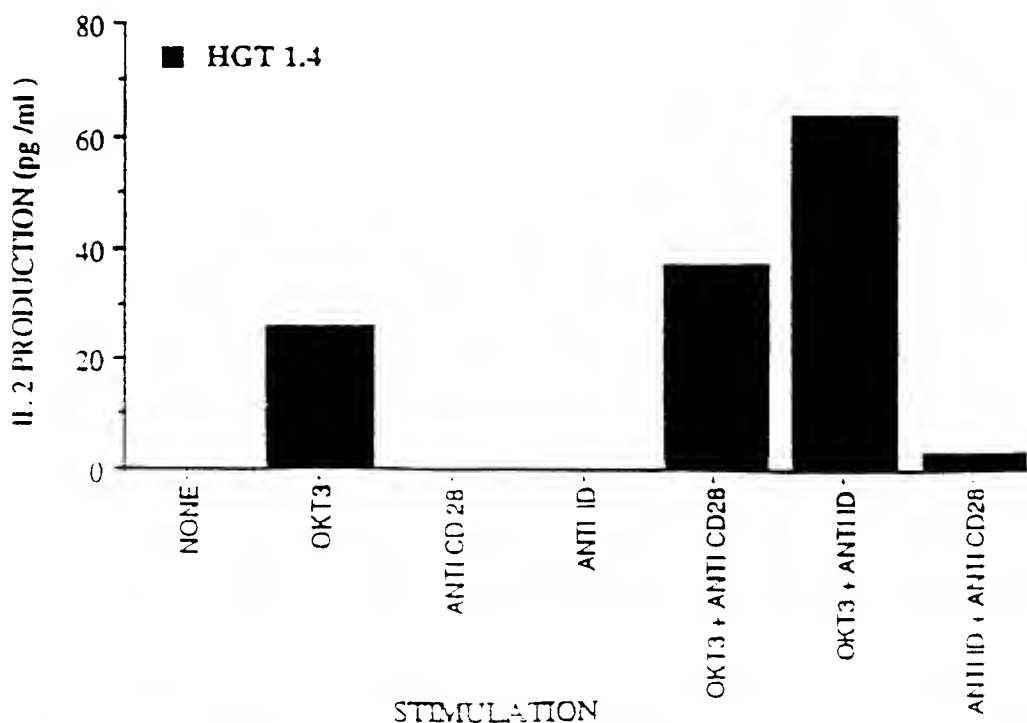
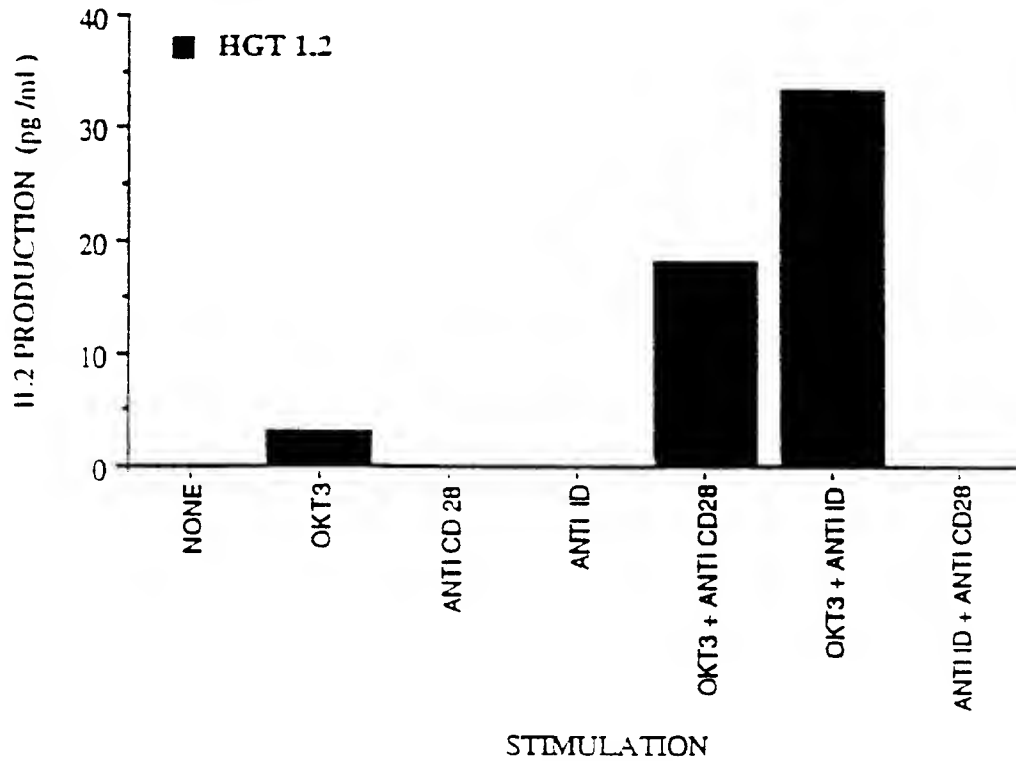
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FIG. 11  
STIMULATION WITH ANTIGEN POSITIVE CELLS.MCF-7



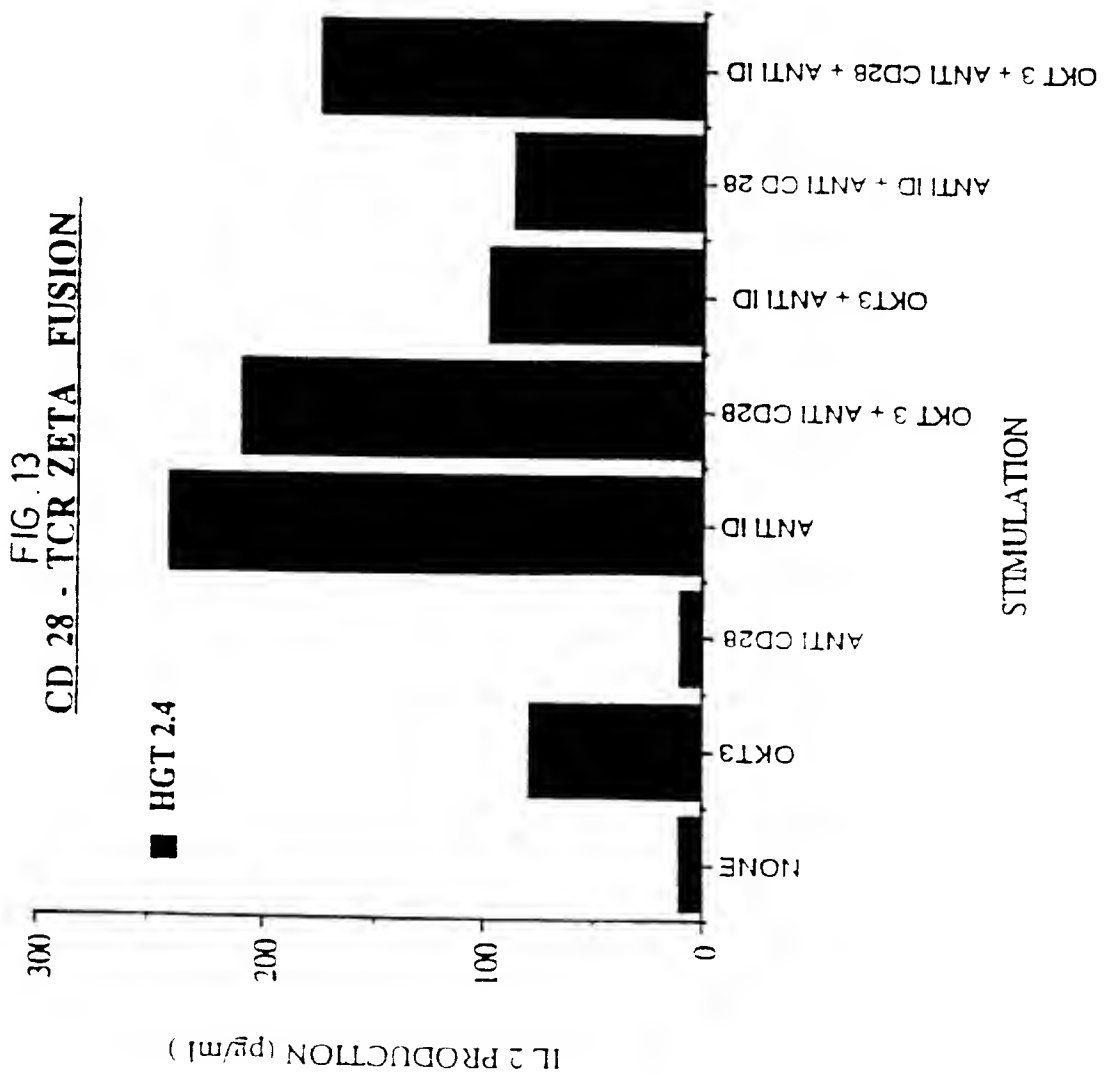
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FIG. 12

IL2 PRODUCTION IN RESPONSE TO VARIOUS STIMULI

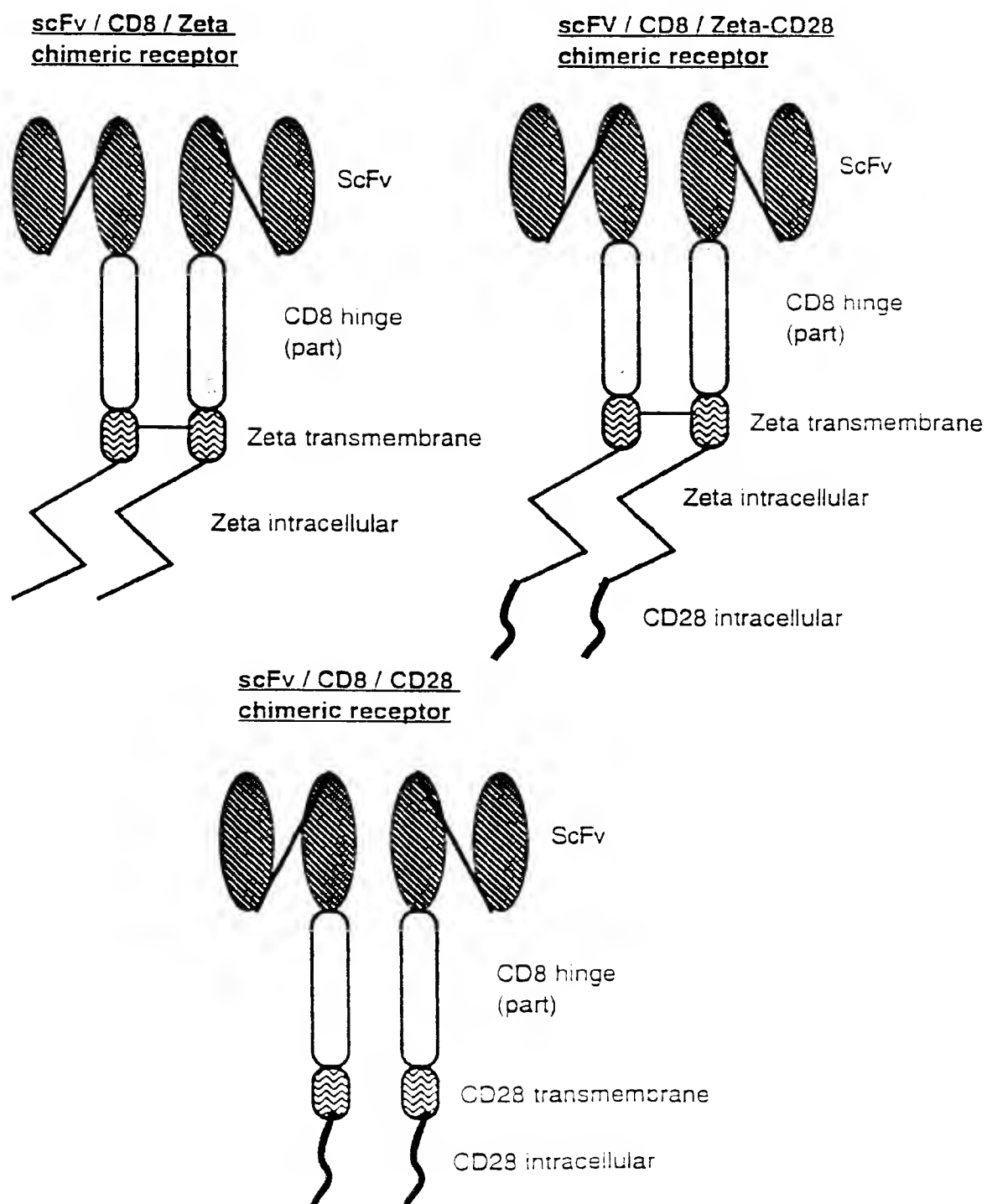


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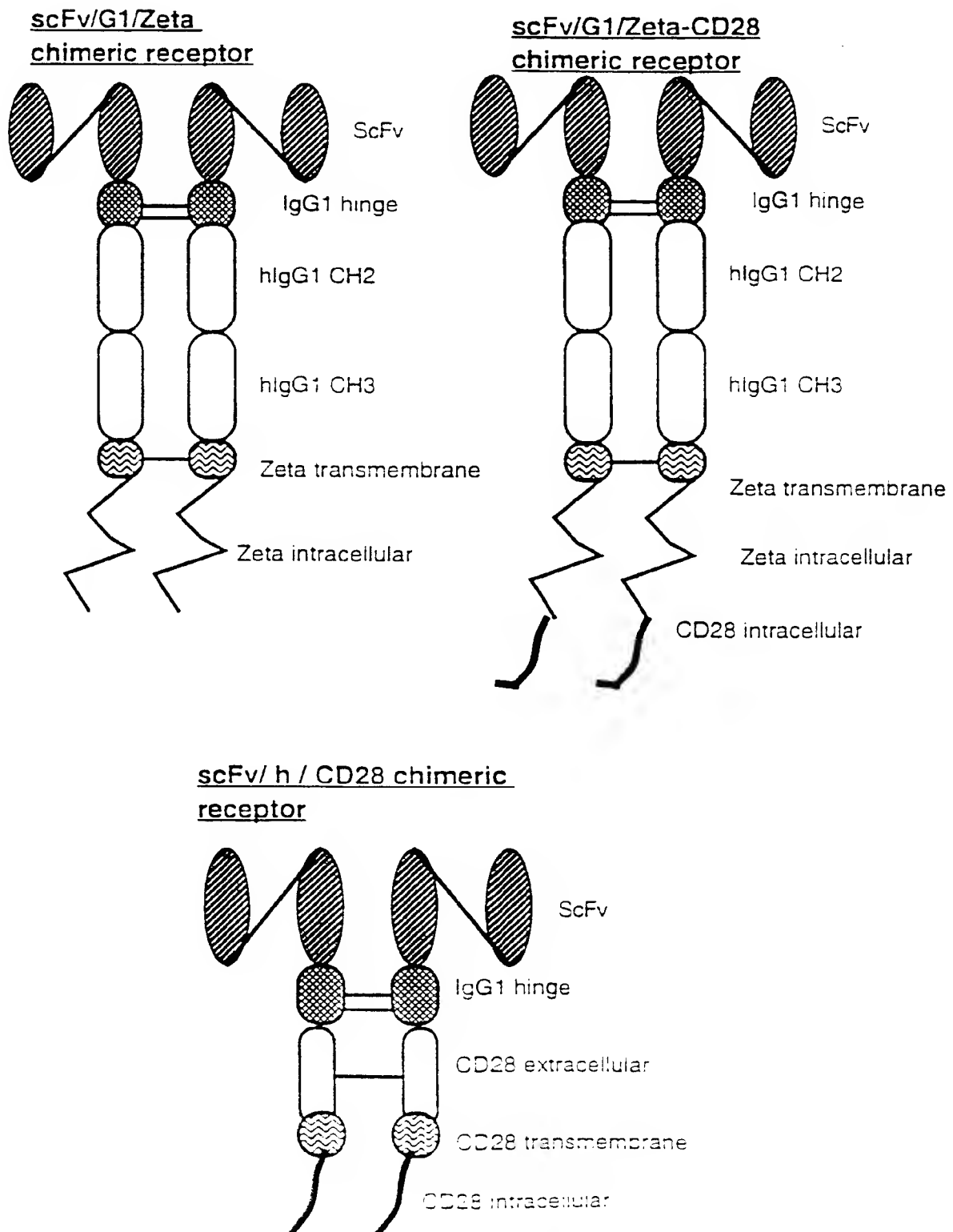
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FIG. 14



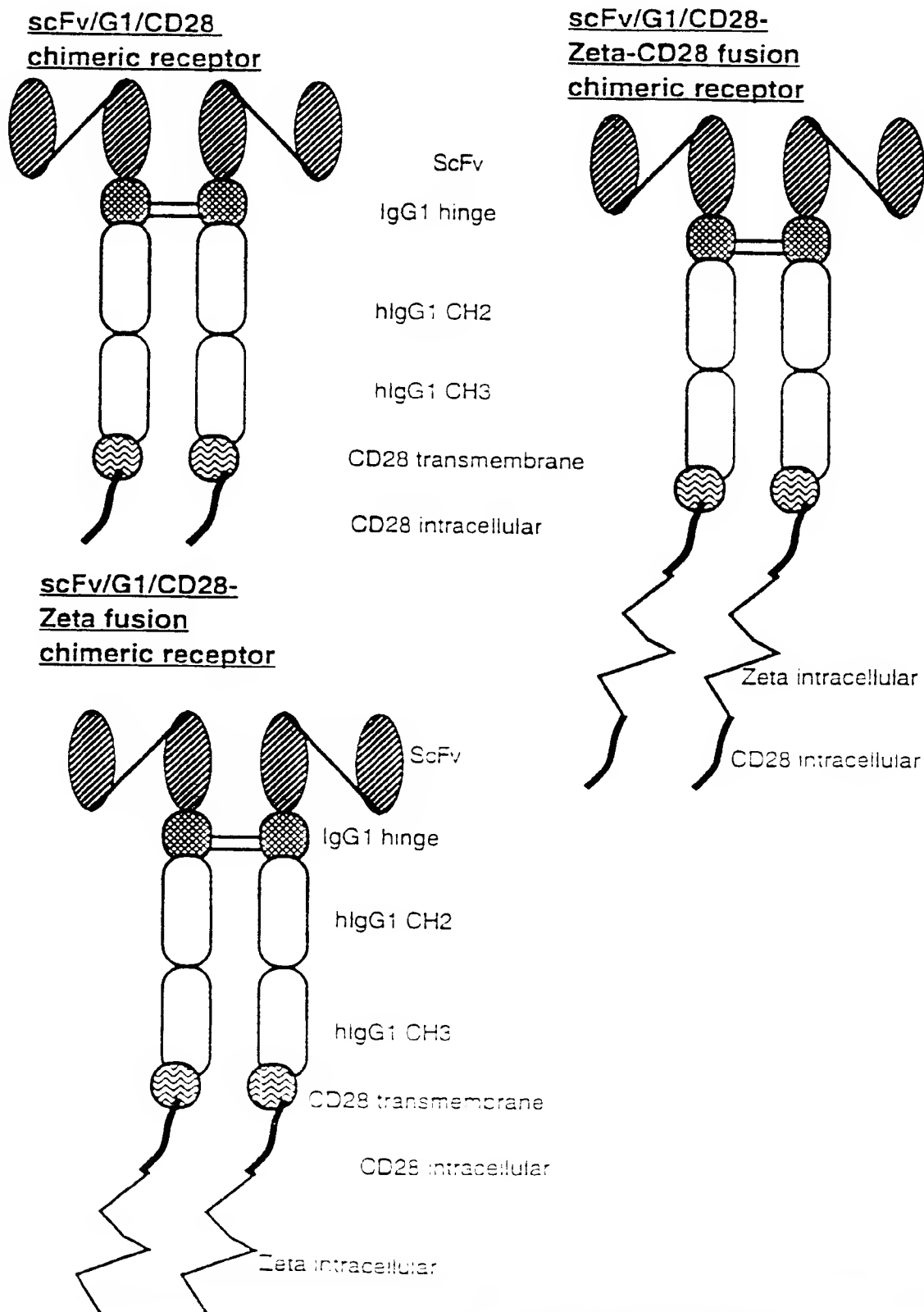
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FIG. 15



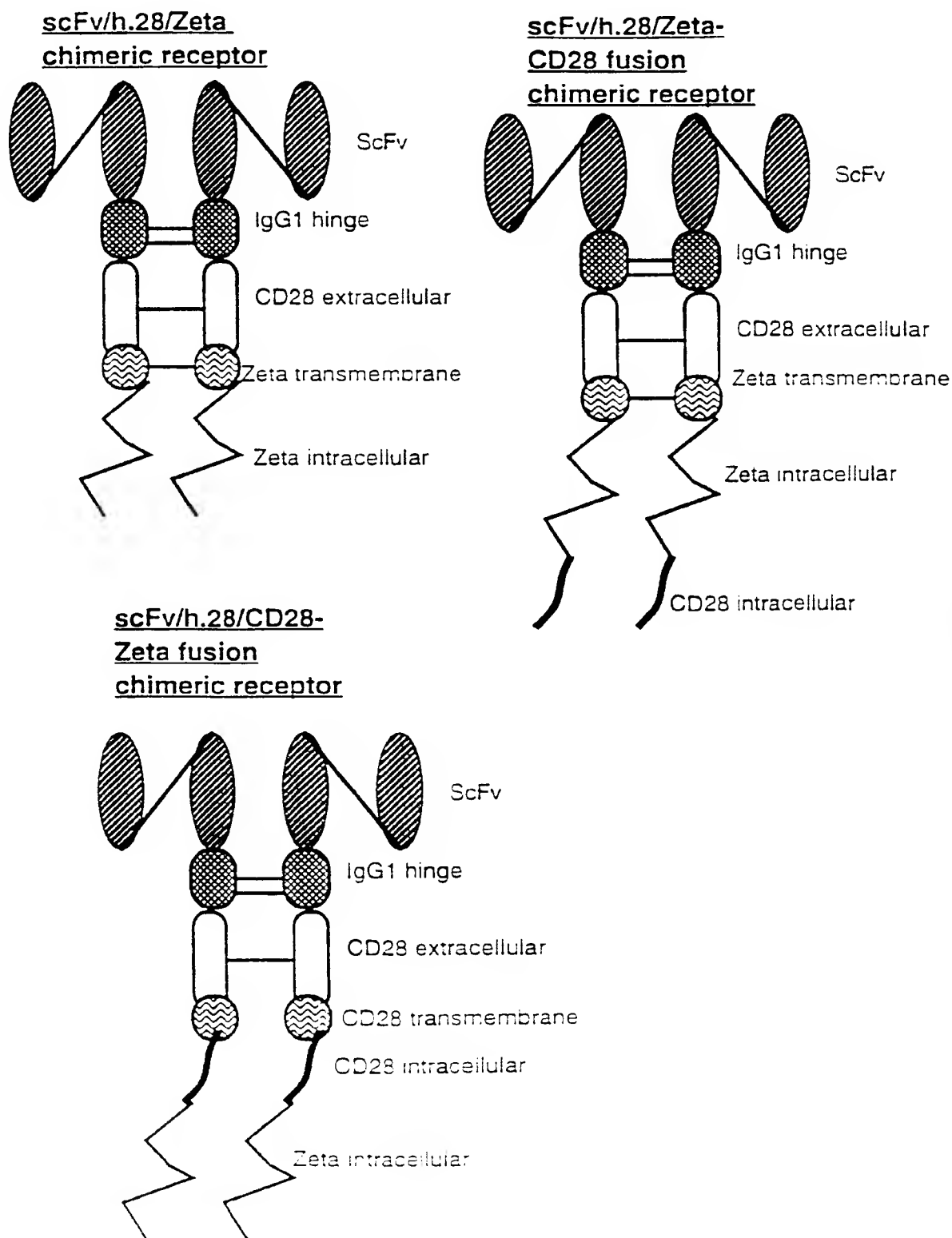
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FIG. 16



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FIG 17



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FIG. 18  
Surface expression of CD28-chimeras  
in transfected Jurakat cell lines determined  
by FITC-CD33 staining

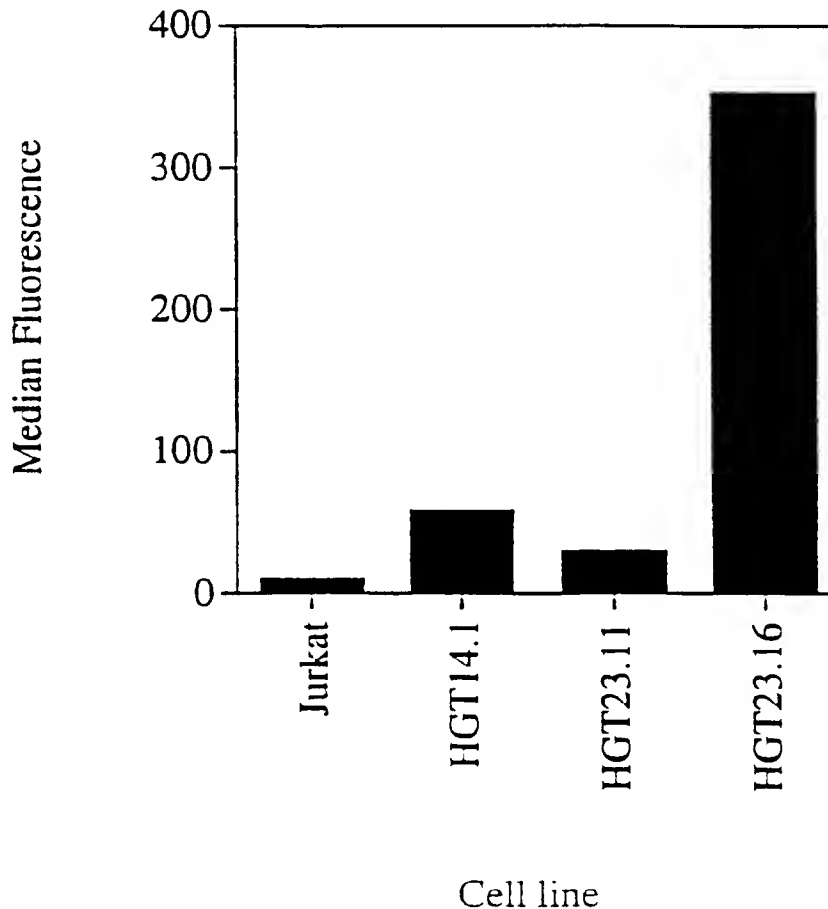
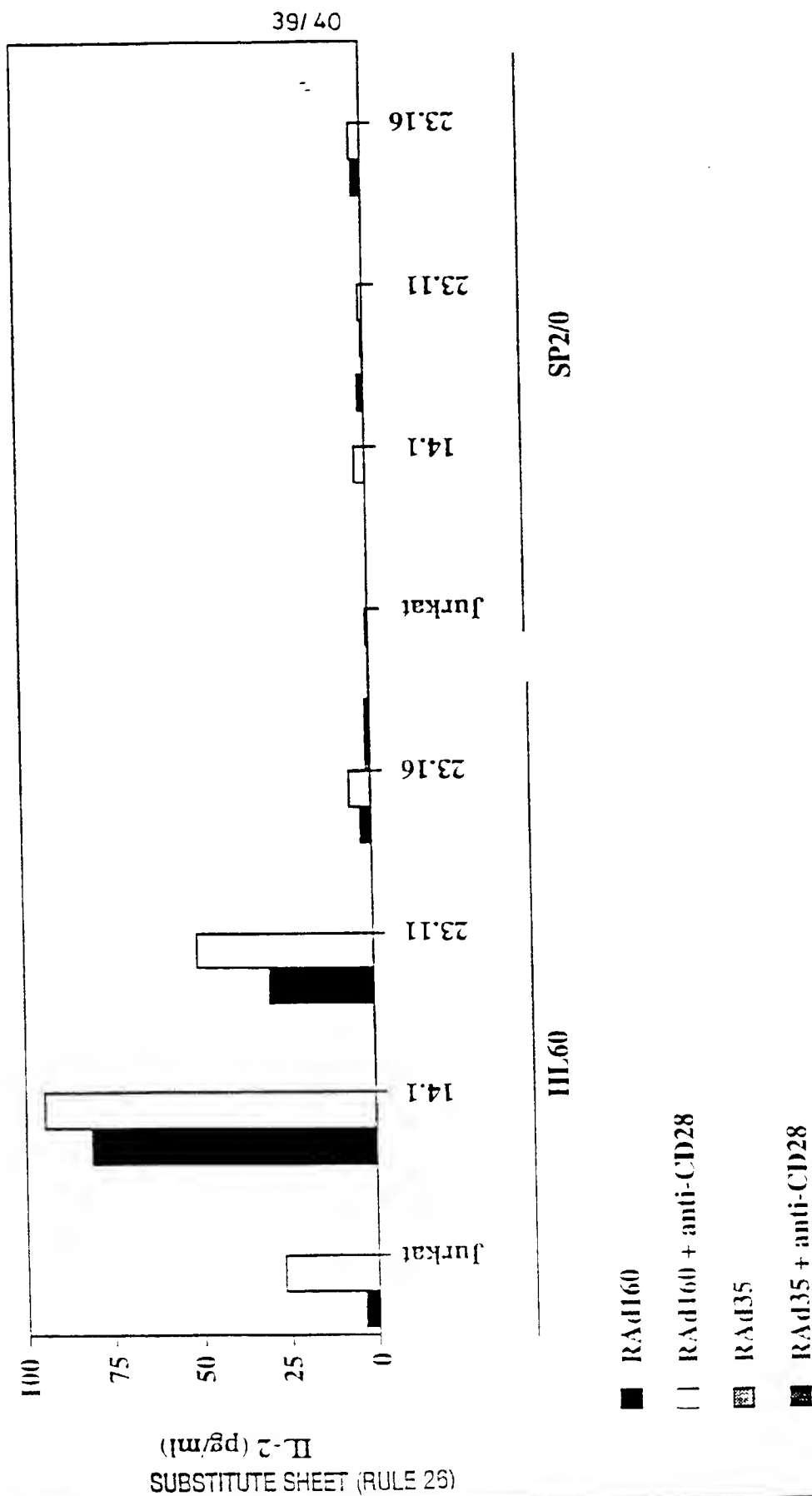


FIG. 19  
IL-2 production by Jurkat cell lines expressing  
p67-CD28 chimeras on infection with RAAd160  
stimulated with target cells



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FIG. 20  
**51Cr Release Assay**  
Adenovirus infected CD8+ve peripheral  
blood lymphocytes with HL60 target cells

